TECHNOPython

Teacher Guide

Lessons for Middle and High School Students

Technology Course
using
Python

Become a programmer.

In this course, students are introduced to Python, a text-based programming language. They complete coding missions to develop the characteristics most valued in a programmer. To start, they ignite their curiosity by exploring scripts to discover how they are put together. Next, they create a series of games including Pet Monster Rescue, Guess It, and Adventure Quest. These foster logical thinking, persistence, and creativity, and are ideal for beginners. Upon completion, students share their favorite Python program in a coding presentation to build strong communication skills. Fun activities highlight the importance of being a team player. Do more than copy lines of code. Have your students develop original scripts using variables, loops, functions, and conditionals.

TECHNOKids®

Table of Contents

Introduction

This section provides valuable information about teaching TechnoPython. It includes a description of the Teacher Guide, as well as an overview of the course. In addition, there are ideas for implementation and technology integration.

For additional guidance, open the course in TechnoHub and select Get Started to access preparatory steps, resource list, and scheduling timetable.

How to Use This Guide

This Teacher Guide contains the following three sections:

Getting Started – This section contains a course description, as well as ideas for implementation.

Course Instructions – The course is comprised of six sessions, each focused on a problem-solving task that aligns with the project theme. Each session includes assignments that break down the task into manageable steps. The components of each session are as follows:

- Overview – An explanation of the session activities and their purpose.
- Materials – A list of handouts, sample files, templates, and teacher resource materials needed to teach the session.
- Teaching Strategies – Instructional methods recommended for teaching the activities.
- Lesson Plan – A detailed list of each step in the session.
- Learning Objectives – A summary of the content knowledge and technical skills taught throughout the session.
- Assignments – A session consists of assignments completed by students. Actions to be performed on the computer by the student are indicated with a triangle (▷). Background information is indicated with a dash (–).
- Review – A session review contains a list of fill-in-the-blank, multiple choice, or short-answer questions intended to review Python commands and programming terminology (answers included).
- Skill Review – An additional assignment intended to review programming skills (includes completed sample). Many of the tasks require students to edit the program created in the Session to enhance the design.
- Extension Activity – An additional activity that relates to the problem-solving task presented in the session. Some of the tasks require students to edit the program created in the Session to add additional features. While other tasks are collaborative or reflections.

Appendices – This section contains additional information or materials including the following resources.

- Assessment Tools – Skill summary and marking sheets to evaluate Python courses.
- Reference Sheets – List of Python code with sample values.
- Glossary – A definition of programming terminology.
- Contact Information – How to contact TechnoKids Inc. for curriculum support.

TechnoPython Overview

Introduction to TechnoPython

In this course, students are introduced to Python, a text-based programming language. They complete coding missions to develop the characteristics most valued in a programmer. To start, they ignite their curiosity by exploring scripts to discover how they are put together. Next, they create a series of games including Pet Monster Rescue, Guess It, and Adventure Quest. These foster logical thinking, persistence, and creativity, and are ideal for beginners. Upon completion, students share their favorite Python program in a coding presentation to build strong communication skills. Fun activities highlight the importance of being a team player. Do more than copy lines of code. Have your students develop original scripts using variables, loops, functions, and conditionals.

Students complete the following tasks:

- In session 1, students explore the Coding Jungle. The goal of this mission is to learn about Python, which is a text-based programming language. To start, the explorers are introduced to terminology by experimenting with code. Once familiar with the role of a programmer, they play a Python Hunt game and then edit the program to discover how it works. Afterwards, they break code in the Catch the Bugs game to develop essential debugging skills. Successful completion of the four-part mission requires curiosity, which is a highly valued trait in a programmer.
- In session 2, students create a program for the Pet Monster Rescue, which is a group that finds loving homes for monsters. To prepare for the programming mission, students learn about strings, integers, and variables. They apply this knowledge to personalize the adoption process. To pair a pet owner to their monster, the programmers write code that ask questions. The answers are used to match people to their ideal pet. This is done by combining logical operators, if and else statements, and a variable that changes from True to False. Throughout the four-part mission, an emphasis is placed upon thinking logically, which is an ability every successful programmer needs.
- In session 3, students design a guessing game in which the player must correctly pick a number before they run out of chances. Clues tell them if their answer is too high or low. This programming mission has six parts. To prepare, students first explore how to code while and for loops. Once familiar with how to repeat a set of instructions, they start to build Guess It. To guide development, the Python programmers sequence steps into algorithms. These flowcharts provide a framework for constructing each part of the program. Fun challenges encourage students to build a unique game. Interwoven throughout all tasks is a focus upon being methodical. This skill helps programmers test different cases to solve problems within the code.
- In session 4, students develop a text-based adventure game. It is a quest that has players overcome challenges to earn rewards. To prepare for this programming mission, students learn techniques to standardize data entry. Next, they apply these skills to build the first part of their game. It will allow players to pick a direction to explore. It will also include a challenge whereby the player can win coins when they travel North. To complete the task, students must be persistent. What will happen in this strange land?

- In session 5, students complete their text-based adventure game. They develop a treasure hunt that has players travel East to collect objects. They must avoid danger, or risk losing it all! To prepare for this part of the programming mission, students learn about lists. They add, remove, sort, and count items. Once this skill is mastered, they apply it to their quest. Throughout the activities, an emphasis is placed upon creativity. This trait is essential as it allows programmers to design original programs.
- In session 6, students share their favorite Python program in a coding presentation. They demonstrate how the game works and explain the code. This provides an opportunity to develop strong communication skills, which help programmers do their job.

Implementation and Technology Integration Ideas

TechnoPython introduces the text-based Python programming language to middle and high school students. They develop programs including the Pet Monster Rescue, Guess It, and Adventure Quest games. It is an ideal course for Grades 6 and up.

Ideas for Implementation

Have your students become programmers using the fun activities in the TechnoPython course. Easy to follow instructions gradually introduce computer science concepts. The activities are suitable for any teaching situation. Select the option that works best for you and your students:

- *STEM Project and a Computer Science Class*: This option is best suited to teachers that have a chunk of instructional time allocated to STEM. TechnoPython has 24 assignments that systematically develop programming skills. The young programmers will learn how to divide a task into steps using an algorithm, follow a plan to sequence instructions, and debug code. In addition, they become aware of how to create variables, manipulate data, format output, import libraries, loop instructions, apply conditional logic, manage lists, and build functions. TechnoPython provides a solid foundation for mastering text-based programming languages in the future.
- *Coding Unit for Beginners*: Assignments in Sessions 1-3 are ideal for students new to text-based programming. The step-by-step instructions explain how to build simple games. Experimentation is encouraged to help young programmers understand Python. As well, there are templates to jump start learning. Session 6 includes a coding presentation activity. It can be completed whether students have built one program or many.
- *Coding Unit for Advanced Beginners:* Once students understand the basics of programming, they extend their learning in Sessions 4-5. The programming task of creating an Adventure Quest is more complicated. The instructions require students to customize the code to suit their storyline. Moreover, many of the scripts include fill-in-the-blanks and do not tell exactly where to place the code. This is done to encourage logical thinking. These assignments are ideal for students that understand the fundamentals and are ready for a challenge. Session 6 includes a coding presentation activity. It can be completed whether students have built one program or many.
- *Hour of Code*: If you only have one class to teach the Python programming language there are many assignments in TechnoPython that can be used for this purpose. For example, if your students are beginners, they can experiment with editing scripts in Session 1 to develop a basic understanding. Or another option is to complete the exploratory assignments such as Assignment 5, 9, 10, 15, and 20.
- *Makerspace Workshop Series*: If you are running a workshop series as part of an after-school program or community event, then you will need to select assignments that fit the number of classes offered. When selecting a mission consider instructional time. For example, Pet Monster Rescue and Guess It can be completed in fewer classes than Adventure Quest. In addition, think about the age range, reading level, keyboarding skills, and programming abilities of students. Activities gain in complexity.

Technology Integration Suggestions

The TechnoPython course is primarily a STEM project that teaches programming skills. However, the activities also integrate into other areas of curriculum including mathematics, language arts, or social studies.

- *Mathematics Problem Solving Unit*
  Connect mathematics to programming. TechnoPython has many activities that combine computational thinking with mathematical reasoning. For example, students apply logical thinking to organize their ideas into a flowchart, that outlines the steps in a program. As well, many of the programs require conditional logic to trigger actions.
- *Language Arts*: Include Python as part of a unique language arts unit. The Adventure Quest has a storyline that uses first person narrative to describe events. The programmer tells the player what they see, how they feel, and what they do as they explore a strange land.
- *Social Studies*: Transfer map making skills to a new task. The Session 5 Extension Activity has students draw a map of a strange land using PowerPoint or Google Slides.
- *Computer Science*: TechnoPython is an introduction to text-based Python programming. The course includes a Summary of Skills that details computer science learning outcomes. Students learn how to manipulate variables, calculate values, trigger actions using logic, format output, define functions, manage lists, and more!

Session 2
Pet Monster Rescue

In this session, students create a program for the Pet Monster Rescue, which is a group that finds loving homes for monsters. To prepare for the programming mission, students learn about strings, integers, and variables. They apply this knowledge to personalize the adoption process. To pair a pet owner to their monster, the programmers write code that ask questions. The answers are used to match people to their ideal pet. This is done by combining logical operators, if and else statements, and a variable that changes from True to False. Throughout the four-part mission, an emphasis is placed upon thinking logically, which is an ability every successful programmer needs.

Session 2 Getting Started

Overview

In this session, students create a program for the Pet Monster Rescue, which is a group that finds loving homes for monsters. To prepare for the programming mission, students learn about strings, integers, and variables. They apply this knowledge to personalize the adoption process. To pair a pet owner to their monster, the programmers write code that ask questions. The answers are used to match people to their ideal pet. This is done by combining logical operators, if and else statements, and a variable that changes from True to False. Throughout the four-part mission, an emphasis is placed upon thinking logically, which is an ability every successful programmer needs.

Materials

- IDLE Python 3
- Python samples:
  - monster a6.py or monster a6 extra.py
  - monster a8.py or monster a8 extra.py
- Pet Monster Mission folder: (optional – track mission progress)
  - Pet Monster Rescue Certificate
  - Pet Monster Rescue Tracking Sheet
- Python Reference Sheet (optional)
- Pet Monster Rescue Marking Sheet (optional)
- Session 2 Peer Review: Rescue a Pet Monster
- Session 2 Review: About Strings, Integers, and Variables
- Session 2 Skill Review: Loop the Questions to Try Again
  - monster s2 review
- Session 2 Extension Activity: Open a Pet Monster Picture
  - monster s2 ea
- Session 2 Extension Activity: Pet Monster Rescue Mission

Teacher Preparation

(Refer to the Prepare to Teach section of this course for instructions)

- View the Python samples to gain an understanding of the completed Pet Monster Rescue program. The samples with the word *extra* in the file name include the challenges.
- Determine how to track progress. Students can do it themselves using the Pet Monster Rescue Tracking Sheet. Alternately, you can record mission completion by awarding certificates. Refer to the Missions\Pet Monster folder for resources.
- Review the assessment tools. A customizable *Pet Monster Rescue Marking Sheet* is available in the Assessment folder.

Teaching Strategy

In this session, students complete the Pet Monster Rescue mission. Explain scenario:

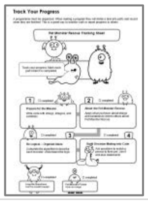
> *In this session, you help the Pet Monster Rescue group. It is an organization that finds pet monsters a loving home. Your programming mission is to design a program that matches an owner to their ideal pet. The mission has four parts. First you will learn about strings, integers, and variables so that you understand how to write text and ask questions. Next, you apply this programming knowledge to inform others about the adoption process. Afterwards, you complete a flowchart that outlines the logic needed to match a person to a pet. Finally, you build the decision-making code that determines if a pet with horns, scales, one eye, or many arms is a good fit. This is done by writing if and else statements that use logical operators. Coding challenges allow you to improve the program and make it unique. Do you want a pet with wings? Let's see if there is one you can take home!*

<u>Prepare to Track the Pet Monster Rescue Mission</u> (optional)

Encourage self-monitoring and recognize accomplishments. Select one or both options:

Pet Monster Rescue Tracking Sheet:

In advance of teaching, print a class set of the tracking sheet using Word or Docs. Or, distribute the file digitally. Have students mark their progress after the completion of each assignment.



Pet Monster Rescue Certificate:

Celebrate students' accomplishments by awarding a Pet Monster Rescue Certificate. Create and/or print a customized award for each person in the class by editing the template in PowerPoint or Slides.

Certificate of Completion

This certificate is awarded to

Student Name

for applying logic to successfully complete the **Pet Monster Rescue** programming mission.

<u>Assignment 5: Prepare for the Pet Monster Rescue Mission</u>

In this assignment, students learn about strings, integers, and variables. They type code into the Python Shell and then study the output. This knowledge is then transferred to complete various coding tasks. An emphasis is placed upon thinking logically. The goal is to build programming knowledge and increase independence.

If you would like to view completed work, have students select *File > Print Window* or *File > Save* to create a copy of the code in the Python Shell.

About Variables

Through exploration students will discover qualities of a variable. They will expand on this knowledge in future assignments. Review the following information at the end of the lesson:

- a variable can be text or a number
- the value of a variable can change
- the name is case specific, which means *score* and *Score* are different variables
- the value of a variable can be set by the programmer or user
- a variable can be used to report or calculate a value
- a variable can be used to interact with the user to personalize the experience
- text and the value of a variable can be put together to form a sentence

Variable Naming Rules

Naming variables is an important skill. Hands-on activities help students discover the rules. You may want to make a list of rules and post them in the classroom. A variable name should:

- be meaningful and describe its purpose
- start with a letter or underscore, but not a symbol or number
- be one word and have no spaces
- not be a restricted Python keyword, which are commands such as `import` or `True`

<u>Assignment 6: About the Pet Monster Rescue Mission</u>

In this assignment, students inform others about Pet Monster Rescue. Step-by-step instructions explain how to organize the code using comments, create variables, write sentences, and ask questions. The skills learned in the previous assignment are expanded upon as students discover new ways to combine text with variables. At the end, are challenges with varying degrees of difficulty. You can assign specific tasks or have students select the ones they wish to complete.

Prior to beginning, you may wish to show a sample of the completed program (monster a6). The file with the word *extra* has the answers to the coding challenges. Highlight some of the code that makes the program work:

`#variables #about #petowner`	Comments are notes to the programmer. They are used to organize the code and divide it into smaller parts.

`place=('Pet Monster Rescue')`
`print(place)`
`print('Welcome to', place)`
	The *place* variable is *Pet Monster Rescue*.
	It is used as a quick way to repeatedly show *Pet Monster Rescue*. The value of the variable is used as a title and in sentences.

`print('Answer questions to find a pet.')`
`print("Let's get started.")`
	The `print` command is used to show information on the screen about the adoption process. Pay attention to the quotes!

`name=input('What is your name? ')`	The `input` command allows the user to type in a value for the variable. It asks the person their name.
`print('Hello', name+'.')`	The name typed in by the user is combined to form the sentence, *Hello Name*. It personalizes the adoption process.

<u>Assignment 7: Be Logical – Organize Your Ideas</u>

In this assignment, students complete a planning sheet about the pet monsters in the shelter. They describe their name, food they like to eat, and what they like to play. The organizer is in the form of a flowchart. It is similar to what programmers use when they map the logic of a program.

Prior to completing the task, review the content of the flowchart. Read the questions and study the choices. Draw a connection between the pet match and the logic statements:

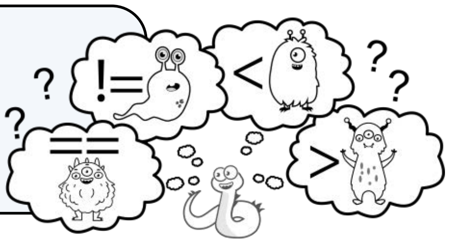
`if horns == 'yes'`	I want a pet with horns.
`if body != 'furry'`	I want a pet that is not furry.
`if eyes < 2:`	I want a pet with less than 2 eyes.
`if arms > 3:`	I want a pet with more than 3 arms.

Logical Operators

If students are new to logical operators, you may wish to introduce this concept before starting. Consider posting the meaning of the symbols onto a bulletin board.

==	equal to	!=	different	<	less than	>	greater than

Think Logically and Programming: Throughout the course, students develop soft skills that are valued in a programmer. In the Pet Monster Rescue Mission, logical thinking is emphasized. In the Session 2 Extension Activity, students consider how this trait helped them complete programming tasks.



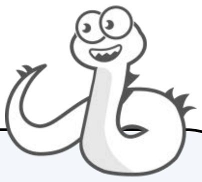
Assignment 8: Build Decision Making into the Code

In this assignment, students complete their program. They ask questions about the type of pet a person wants to own. The answers are used to find a match to a monster at the Pet Monster Rescue. The focus is on using logic to trigger actions. By writing the code and then viewing the output, students gain an understanding of how loops, logical operators, and True or False work within a program. This assignment also acts an introduction to if and else.

Prior to beginning, you may wish to show a sample of the completed program (monster a8). The file with the word *extra* has the answers to the coding challenges. Have students read the code in the table listed at the beginning of Assignment 8. Find each line and discuss how it is used to make the program work.

At the end of the assignment are challenges. The first two options practice how to show and format text. The following two options practice using logical operators and writing if statements. These allow students to demonstrate their programming skills. Encourage students to complete these tasks.

If time permits, have students pair up with a classmate to test their program. A worksheet is available in *Session 2 Peer Review: Rescue a Pet Monster*. It contains a list of questions about their experience.



Repeat the Questions or Show a Pet Monster Picture:

Make the program even better!

- Complete the *Session 2 Skill Review* to repeat the questions. This is an excellent way to apply knowledge about if and else statements.
- Complete the *Session 2 Extension Activity* to open a picture of the pet monster. This uses a Python library to display a URL. An extra challenge includes adjusting the timing of events.

Lesson Plan

Assignment 5: Prepare for the Pet Monster Rescue Mission

- Open the Python Shell.
- What is a string? Explore the use of quotes or a slash to show text on the screen.
- What is an integer? Experiment with showing or calculating numbers.
- What is a variable? Discover how to show the value of a variable.
- Input a variable value. Ask a question and include the answer in a sentence.
- Name a variable. Test variable names to understand the naming rules.
- Close the Python Shell.

Assignment 6: About the Pet Monster Rescue Mission

- Open IDLE and create a new Python file called *monster*.
- Inform others about Pet Monster Rescue. Apply knowledge of quotes and strings.
- Create a variable to store the value *Pet Monster Rescue*. Use it to make many sentences.
- Ask a question to get to know the pet owner. Use their reply in a sentence.
- Format text to adjust spacing using a comma or + sign.
- Ask a question about the pet owner's home and include answer in a sentence.
- Complete coding challenges to practice formatting text and asking questions.
- Close the program.

Assignment 7: Be Logical – Organize Your Ideas

- Read the questions and answers to highlight the logic used to control the program.
- Complete the flowchart to describe the pet monsters.

Assignment 8: Build Decision Making into the Code

- Open the saved *monster.py* program in IDLE.
- Create a *find* variable that will start and stop a loop of questions.
- Ask a question about horns. Write an if statement for the answer '*yes*'.
- Test the code for the answers *yes* and *no*.
- Edit the code to stop the loop of questions by adding an *else* statement and break.
- Ask a question about the body. Write an if statement for the answer not '*furry*'.
- Test the code for the answers *furry* and *slimy*.
- Ask a question about the number of eyes. Write an if statement for an answer less than 2.
- Test the code. Read the error.
- Edit the code to create a variable that changes the answer about eyes into an integer.
- Ask a question about the number of arms. Write an if statement for an answer greater than 3.
- Test the code for both 2 arms and 4 arms.
- Complete coding challenges to practice formatting text, asking questions, and creating if statements that use logical operators.
- Close the program.

Learning Objectives

Programming Basics

- recognize that a string is text and an integer is a whole number
- understand the purpose of a variable
- reflect upon how logical thinking is a valuable trait in a programmer (optional)

Program Development

- plan a Pet Monster Rescue game
- organize ideas by completing an algorithm
- divide a program into parts using comments
- write Python coding that sequences instructions
- review program design and implement improvements based on assessment
- apply debugging techniques to identify and fix errors

Python Basics

- write lines of code in the Python Shell
- create a new Python program
- open a Python program in the IDLE Editor Window
- run a program and view the output in the Python Shell

Work with Strings, Integers, and Variables

- follow naming rules for variables
- use the value of a variable multiple times within a program to save time
- use the value of a variable to report information and/or trigger an action
- display numbers as either a string or integer
- calculate the value of integers
- name a variable and assign the value
- prompt the user to input the value of a variable by asking a question
- convert a variable value from a string into an integer

Format the Output

- apply the use of quotes or a slash to output strings with different types of punctuation
- combine text with the value of a variable to create a sentence
- adjust the spacing in a sentence using a comma or + sign

Loop a Set of Instructions

- loop a set of instructions while a value is True
- end a loop when a value is False
- break a loop to stop running a set of instructions

Trigger Actions Using Logic

- control actions using a variable that changes from True to False
- apply logical operators to trigger an action (==, !=. <, >)
- write if statements that are based on conditional logic
- write an else statement that runs when all other statements are false

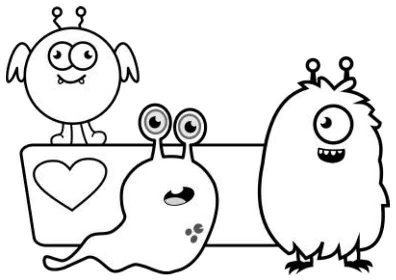
Debug Code

- run the code and study the output
- test many different values to verify the output is correct
- read the error messages to understand the problem with the code

Applied Technology

- explore strings, integers, and variables by writing lines of code and viewing the output
- design a program that matches a person to their ideal pet using conditional logic
- personalize the user experience by including their answers in the output
- apply Python programming skills to complete coding challenges
- offer feedback about a Python program (optional)
- write code that opens a picture of a pet monster on the Internet (optional)

Assignment 5 Prepare for the Pet Monster Rescue Mission



It is time for a new programming mission. You are going to create a program for the Pet Monster Rescue. Pet Monster Rescue is a group that finds loving homes for monsters.

The program will match people to their ideal pet. It will ask questions, store answers, and use logic to determine if there is a monster that meets the person's needs.

To successfully complete the mission, you must think logically. This is a valued trait in a programmer. People who are logical:

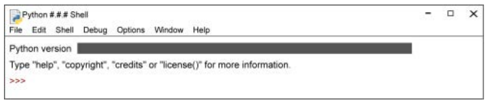
- carefully watch what is happening
- pay attention to details
- outline ideas clearly by breaking them down into parts
- study facts to determine if a statement is True or False

To complete the task, aside from being logical, you also need to know more about Python. Follow the instructions to write code to learn about strings, integers, and variables.

Open the Python Shell

1. ▷ Open IDLE (Python).

   ▷ View the Python Shell:



```
Python #.#.# Shell
File  Edit  Shell  Debug  Options  Window  Help
Python version
Type "help", "copyright", "credits" or "license()" for more information.
>>>
```

What is a String?

A string is text. It can be a word, phrase, or sentence. In Python, str is short for string.
To learn about strings, type each line of code and then press ENTER to study the output.

2. ▷ A string must have brackets and quotes around it:

```
>>> print('a string is text')
```

▷ A string can have single or double quotes around it:

```
>>> print("it must have quotes")
```

▷ Use double quotes if you want to use an apostrophe in the string:

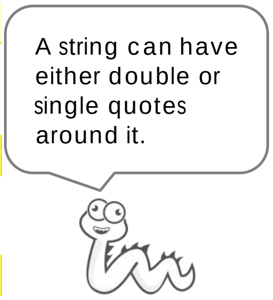
```
>>> print("let's code")
```

▷ Use single quotes if you want to show someone talking in the string:

```
>>> print('he said "okay"')
```

▷ If you want both, you need to put a slash before the apostrophe:

```
>>> print('she said "let\'s start now"')
```



▷ Be logical. Study the above code to determine how to complete each task:

☐ `it's fun`   ☐ `I said "wow"`   ☐ `I said "wow, it's fun"`

What is an Integer?

An integer is a whole number such as 10 or 42. In Python, int is short for integer.
To learn about integers, type each line of code and then press ENTER to study the output.

3. ▷ An integer must have brackets around it:

```
>>> print(5)
5
```

▷ An integer can be used to calculate values:

```
>>> print(6+4)
10
```

A string cannot be calculated but an integer can.

▷ If you put quotes around a number, it becomes a string:

```
>>> print('6+4')
6+4
```

▷ Think logically! Study the above code to determine how to complete each task:

☐ show `10` ☐ calculate `3+2` ☐ show the equation `3+2=`

What is a Variable?

A variable stores a value that can change. It can be text, a number, or a list of items.
To learn about variables, type each line of code and then press ENTER to study the output.

4. ▷ A variable has two parts – name and value:

```
>>> name=('value')
>>> print(name)
value
```

The print command lets you show the stored value of the variable.

▷ The variable value can change:

```
>>> name=('Student Name')
>>> print(name)
Student Name
```

The variable now has a new value. It is your name.

▷ The variable is case specific. Type a capital N in the variable name:

```
>>> print(Name)
Traceback (most recent call last):
  File "<pyshell#11>", line 1, in <module>
    print(Name)
NameError: name 'Name' is not defined
```

Always check your spelling. The case of the letters matter.
Python treats *NAME*, *Name*, and *name* as different variables.

▷ A variable can store a string or integer. Think logically! Show the value using `print`:

☐ `weather=('sunny')` ☐ `mood=('happy')` ☐ `count=(5)`

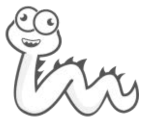
Input a Variable Value

Sometimes the programmer will input a value for a variable. However, other times the user can input a value. This is done using the input command.

5. ▷ Ask the user a question:

```
>>>food=input('What food do you like?')
What food do you like?pizza
```

Type in an answer.



▷ The input is stored by the computer:

```
>>> print(food)
pizza
```

▷ The input can be used to have the program talk to the user:

```
>>> print('I also like', food)
I also like pizza
```

▷ Think logically! Study the above code to determine how to ask each question:

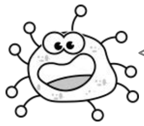
☐ What music do you like? ☐ What is your age? ☐ Do you like sports?

Name a Variable

A variable name must be meaningful. It should describe its purpose. There are rules you must follow when assigning a variable name. To learn them, type each line of code and then press ENTER. Does the variable name follow the rules, or do you get an error?

6. ▷ A variable name must start with a letter or underscore, but not a symbol or number. Put a checkmark ✓ beside the variable names that work:

☐ `color=('red')` ☐ `2color=('red')` ☐ `_color=('red')` ☐ `!color=('red')`



If a variable name does not follow the rules you will get a SyntaxError: invalid syntax error.

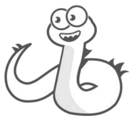
▷ A variable name must be one word with no spaces. Put a checkmark ✓ beside the variable names that work:

☐ `game_score=(0)` ☐ `game score=(0)` ☐ `gamescore=0`

▷ A variable name cannot be a Python keyword. Keywords are color-coded. Put a checkmark ✓ beside the variable name that works:

☐ `answer=('yes')` ☐ `True=('yes')` ☐ `import=('yes')`

Python keywords are a colored. They can be orange or purple. Use this as a clue.



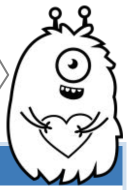
Close the Python Shell

Assignment 6 About the Pet Monster Rescue Mission

In this programming mission, you design a program for the Pet Monster Rescue. It is a group that helps people adopt pet monsters in need of loving homes.

To start, you will apply what you know about strings and variables to inform others about the Pet Monster Rescue. To personalize the adoption process, you will ask questions.

Be logical. Write the program one part at a time. Test it as you go.



To interact with the user, you will use the following code:

CODE	PURPOSE
`print('Type text here.')`	show text
`print("Let's use an apostrophe.")`	use double quotes around text to show an apostrophe
`name=('value')`	create a variable and set the value to text
`name=input('What is the question?')`	create a variable that has the user input the value
`print('Type text', name)`	make a sentence that includes the variable value
`print('Type text', name+'.')`	remove the space between the variable value and text

Open IDLE and Create a New File

1. ▷ Open IDLE (Python).

   ▷ From the File menu, select *New File*.

   ▷ From the File menu, select *Save*.
   Type monster as the file name. Click *Save*.

Inform Others About the Pet Monster Rescue

2. ▷ A comment is a note to the programmer. Organize your code:

```
#about
```

Comments divide a program into logical parts.

   ▷ Tell others about the Pet Monster Rescue program:

```
#about
print('Answer questions to find a pet.')
print("Let's get started.")
```

Use "double quotes" if you have an apostrophe in a word.

3. ▷ From the File menu, select *Save* or press CTRL + S.

   ▷ From the Run menu, select *Run Module*.

   ▷ Read the text:

```
Answer questions to find a pet.
Let's get started.
>>>
```

   ▷ Close the Python Shell.

Create a Variable to Store the Value 'Pet Monster Rescue'

4. ▷ At the top of the program add a section for variables:

```
#variables

#about
print('Answer questions to find a pet.')
print("Let's get started.")
```

▷ Create a variable to store the name of the place:

```
#variables
place=('Pet Monster Rescue')
```

▷ Use the variable to show a title in the *about* section:

```
#variables
place=('Pet Monster Rescue')

#about
print(place)
print('Answer questions to find a pet.')
print("Let's get started.")
```

A variable can save you time and make things easier. You can use it again and again.

▷ Save the changes. From the Run menu, select *Run Module*.

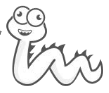
▷ When done, close the Python Shell.

Use the Variable Value in Sentences

5. ▷ You can include the value of a variable in a sentence:

```
#about
print(place)
print('Welcome to', place)
print('Answer questions to find a pet.')
print("Let's get started.")
```

The comma adds a space between the text and the value of the variable.



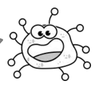
▷ Apply your skills to view the changes.

```
Pet Monster Rescue
Welcome to Pet Monster Rescue
Answer questions to find a pet.
Let's get started.
>>>
```

6. ▷ You can include the value of a variable in the middle of a sentence:

```
print("Let's get started.")
print('Thanks for visiting', place, 'where pets are family.')
```

The program will show a syntax error if you forget the commas around the variable.



▷ Apply your skills to view the changes.

Ask a Question to Get to Know the Pet Owner

7. ▷ You can have the user input the value of a variable. Ask the person's name using input:

```
#variables
place=('Pet Monster Rescue')

#about
print(place)
print('Welcome to', place)
print('Answer questions to find a pet.')
print("Let's get started.")
print('Thanks for visiting', place, 'where pets are family.')

#pet owner
name=input('What is your name?')
```

▷ The answer can be used to have the program talk to the user:

```
#pet owner
name=input('What is your name?')
print('Hello', name)
```

▷ Apply your skills to view the changes. Type the answer to the question:

```
Pet Monster Rescue
Welcome to Pet Monster Rescue
Answer questions to find a pet.
Let's get started.
Thanks for visiting Pet Monster Rescue where pets are family.
What is your name?Alex
Hello Alex
>>>
```

To make it easier to read, you need a space between the question and answer. You should also add a period after the name in the greeting.

Make the Text Easier to Read

8. ▷ Add a space between the question and the answer:

```
#pet owner
name=input('What is your name? ')
print('Hello', name)
```

add a space before the quote

▷ To add a period to a sentence you must use a plus sign:

```
#pet owner
name=input('What is your name? ')
print('Hello', name+'.')
```

add a plus sign + to remove space between a variable and text

A comma before or after a variable creates a space.
A plus sign before or after a variable removes any space.

▷ Apply your skills to view the changes.

Ask Another Question

9. ▷ Ask the person to describe their home:

```
#pet owner
name=input('What is your name? ')
print('Hello', name+'.')
home=input('Is your home calm or busy? ')
print('Okay. Your home is a', home,'place.')
```

▷ Apply your skills to view the changes. Type the answers to each question:

```
Pet Monster Rescue
Welcome to Pet Monster Rescue
Answer questions to find a pet.
Let's get started.
Thanks for visiting Pet Monster Rescue where pets are family.
What is your name? Alex
Hello Alex.
Is your home calm or busy? busy
Okay. Your home is a busy place.
>>>
```

Take the Coding Challenge

10. You know lots about how to show text on the screen, store variables, ask questions, and use the answers in a sentence. Pick a challenge to improve the program.

- ☐ Add a decorative line around the title in the about section. For example:

```
-*-*-*-*-*-*-*-*-*-*-
Pet Monster Rescue
-*-*-*-*-*-*-*-*-*-*-
```

HINT: You need to add two `print` lines. One above and one below the title.

- ☐ Add a sentence after the welcome greeting:

```
You're going to love your new pet.
```

HINT: It has an apostrophe. You need double quotes around the string.

- ☐ Add a comma after the variable value *Pet Monster Rescue*:

```
Thanks for visiting Pet Monster Rescue, where pets are family.
```

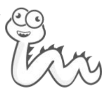
HINT: You need to use a plus sign + after the variable.

- ☐ Ask the question *How many pet monsters do you own?* Reply *So you have _ .*

```
How many pet monsters do you own? 2
So, you have 2.
```

HINT: You need to make a variable. Name it and use the command `input` to ask the question.

When testing a program, you can kill or stop running it. To do this, click *Close* X. Click *OK.*



Close Python

Assignment 7 Be Logical – Organize Your Ideas

Your Pet Monster Rescue program is looking great!

Next, you need to write the part of the code that will help people find their ideal pet. You will do that by asking questions. If the answer is a match to a monster in the shelter, the person can take their new pet home. If there is no match, the program will continue to ask questions.

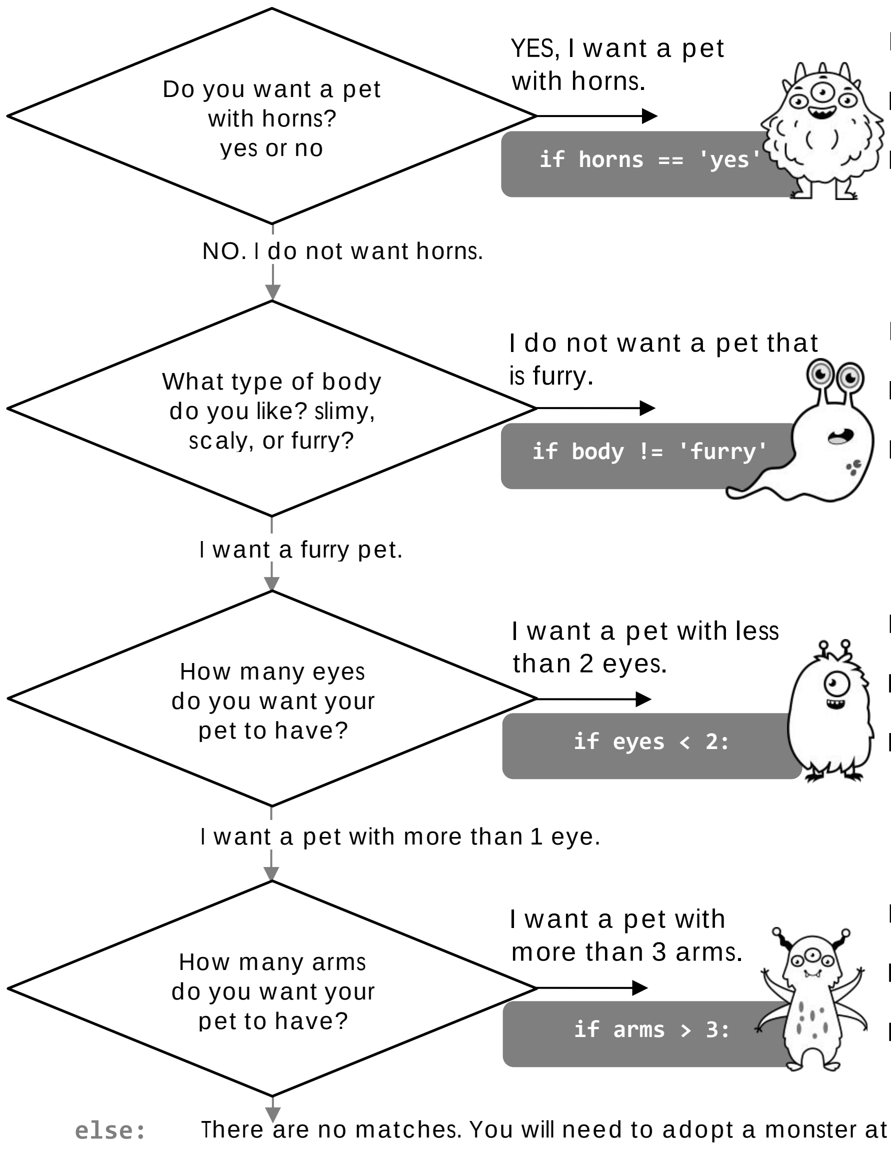
This part of the program will use logic to make decisions:

==	equal
!=	different
>	greater than
<	less than

if	A keyword used to trigger an action when a statement is True.
else	A keyword used to trigger an action only when all other statements above are False.

Before you start to write the code, you must form a plan. Programmers are logical. They often use a flowchart to make an algorithm. An algorithm is a description of what the program will do.

Complete the algorithm to describe each monster. What is their name? What food do they eat? What do they like to play?


Do you want a pet with horns? yes or no
YES, I want a pet with horns.
NO. I do not want horns.
What type of body do you like? slimy, scaly, or furry?
I do not want a pet that is furry.
I want a furry pet.
How many eyes do you want your pet to have?
I want a pet with less than 2 eyes.
I want a pet with more than 1 eye.
How many arms do you want your pet to have?
I want a pet with more than 3 arms.

```
if horns == 'yes'
```

Name:

Food:

Play:

```
if body != 'furry'
```

Name:

Food:

Play:

```
if eyes < 2:
```

Name:

Food:

Play:

```
if arms > 3:
```

Name:

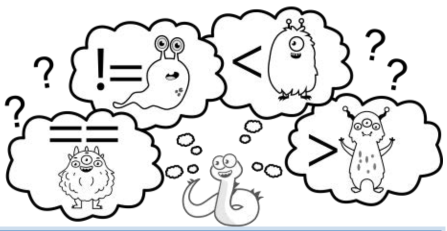
Food:

Play:

`else:` There are no matches. You will need to adopt a monster at another time.

Assignment 8 Build Decision Making into the Code

In this assignment, you complete the Pet Monster Rescue program using your plan from Assignment 7. You will write code that asks questions. The answers will be used to match a person to their ideal pet.



The program will make decisions using the following code:

CODE	PURPOSE
`find=True` `find=False`	A variable that starts and stops the search for a pet. While `find` is set to True the person is asked a list of questions. When `find` changes to False the search ends.
`while find:`	A loop that contains a list of questions. The person will be asked each question in order. If no match is found to a pet, the search ends.
`if horns=='yes':`	A statement that finds a pet with horns if the person's answer is 'yes'.
`if body!='furry':`	A statement that finds a pet if the person's answer is not 'furry'.
`if num_eyes<2:`	A statement that finds a pet with one eye if the number is less than 2.
`if num_arms>3:`	A statement that finds a pet with 4 or more arms if the number is greater than 3.
`break`	A command that stops the loop. This happens when a person finds a pet and no longer needs to answer questions.
`else`	An action that happens if there are no matches after answering all the questions. `find` changes to False causing the search to end.

Open the Saved Monster File in IDLE

1. ▷ Open IDLE (Python).

   ▷ From the File menu, select *Open*.

   ▷ Go to the place where you saved the monster file. Select it. Click *Open*.

Control the Search

2. ▷ A *find* variable will be used to start and stop the search. Add it to the variable section:

```
#variables
place=('Pet Monster Rescue')
find=True
```

The *find* variable will be used to make a loop.

   ▷ Create a loop that controls a list of questions:

```
#pet owner
name=input('What is your name? ')
print('Hello', name+'.')
home=input('Is your home calm or busy? ')
print('Okay. Your home is a', home, 'place.')
own=input('How many pet monsters do you own? ')
print('So you have', own+'.')

#find match
while find:
```

press ENTER

Find a Match if the Person Wants a Pet with Horns

3. ▷ Ask a question and store the answer as the variable *horns*:

```
#find match
while find:
    horns=input('Do you want a pet with horns? yes or no ')
```

The answer will be used to find a pet with horns.

▷ From the File menu, select *Save* or press CTRL + S.

▷ From the Run menu, select *Run Module*.

▷ The question repeats. This is because there is nothing to stop the loop yet:

```
Do you want a pet with horns? yes or no yes
Do you want a pet with horns? yes or no no
Do you want a pet with horns? yes or no yes
Do you want a pet with horns? yes or no
```

▷ Close the Python Shell.

You need to add code that will match a person to a pet if they answer yes.

4. ▷ Add an *if* statement that matches a person to a pet with horns:

```
#find match
while find:
    horns=input('Do you want a pet with horns? yes or no ')
    if horns=='yes':
        print('We have a match.')
        print('Describe the pet. Refer to Assignment 7.')
```

What is the pet's name? What does it eat and play?

Test the Code

5. ▷ Apply your skills to run the program.

▷ When you see the question you just added, type yes.

▷ Read about the matching pet monster:

```
Do you want a pet with horns? yes or no yes
We have a match.
It is Furhop. He likes to eat pizza and play ring toss.
Do you want a pet with horns? yes or no
```

▷ When you see the question again, type no.

The question keeps repeating itself. You need to add code that stops the loop.

▷ Close the Python Shell.

Stop the Loop to End the Search

6. ▷ If there is no match, the search needs to end. Set the *find* variable to *False*:

```
if horns=='yes':
    print('We have a match.')
    print('It is Furhop. He likes to eat pizza and play ring toss.')
else:  press BACKSPACE
    find=False
    print('We do not have a matching pet.')
```

▷ Test the code. Run the program. When you see the question you just added, type no:

```
Do you want a pet with horns? yes or no no
We do not have a matching pet.
>>>
```

▷ Close the Python Shell.

7. ▷ Run the program again. When you see the question, type yes:

```
Do you want a pet with horns? yes or no yes
We have a match.
It is Furhop. He likes to eat pizza and play ring toss.
Do you want a pet with horns? yes or no
```

The loop needs to stop if there is a match.
This can be done using break.

▷ Close the Python Shell.

▷ Add break to stop the loop:

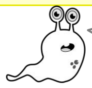
```
if horns=='yes':
    print('We have a match.')
    print('It is Furhop. He likes to eat pizza and play ring toss.')
    break
else:
```

▷ Apply your skills to test that the loop ends when there is a match.

Make a Match if the Answer is Not Furry

8. ▷ Ask another question and store the answer as the variable *body*:

```
if horns=='yes':
    print('We have a match.')
    print('It  press ENTER  ikes to eat pizza and play ring toss.')
    break
body=input('What type of body do you like? slimy, scaly, or furry? ')
else:
```



The answer will be used to find a pet that is not furry.

▷ Add an *if* statement that matches a person to a pet that is not furry:

```
body=input('What type of body do you like? slimy, scaly, or furry? ')
if body!='furry':
    print('You answered', body)
    print('We have a match. Describe the pet. Refer to Assignment 7.')
    break
```

Be Logical – Test One Value at a Time

9. ▷ Apply your skills to run the program.

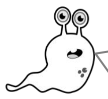
▷ When you are asked if you want a pet with horns, type no.

```
Do you want a pet with horns? yes or no no
```

Since there is no match, the program will ask the next question.

▷ When you are asked about the body of the pet, type furry.

```
What type of body do you like? slimy, scaly, or furry? furry
We do not have a matching pet.
>>>
```



The program only finds a match if the answer is different from furry. Try it!

▷ Apply your skills to test the program again:

```
Do you want a pet with horns? yes or no no
What type of body do you like? slimy, scaly, or furry? slimy
You answered slimy
We have a match. It is Slimo. He likes to eat bugs and swim in mud.
>>>
```

▷ Close the Python Shell.

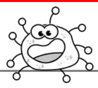
Make a Match if the Person Wants Less than 2 Eyes

10. ▷ Ask another question and store the answer as the variable *eyes*. Add the logic:

```
    eyes=input('How many eyes do you want your pet to have? ')
    if eyes<2:
        print('You want a pet with', eyes, 'eye.')
        print('We have a match. Describe the pet. Refer to Assignment 7.')
        break
    else:
```

▷ Apply your skills to test the program:

```
Do you want a pet with horns? yes or no no
What type of body do you like? slimy, scaly, or furry? furry
How many eyes do you want your pet to have? 1
Traceback (most recent call last):
  File "C:\Users\Student\Documents\monster.py", line 36, in <module>
    if eyes<2:
TypeError: '<' not supported between instances of 'str' and 'int'
```



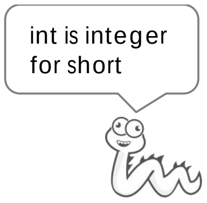
The answer to a question is stored as a string. Text is not a number value. You must change the variable *eyes* to an integer.

▷ Close the Python Shell.

Change the Variable Type so the Logic Can Work

11. ▷ Create a new variable to turn *eyes* into an integer. Edit the code:

```
eyes=input('How many eyes do you want your pet to have? ')
num_eyes=int(eyes)
if num_eyes<2:
    print('You want a pet with', num_eyes, 'eye.')
```



▷ Apply your skills to test the program again:

```
Do you want a pet with horns? yes or no no
What type of body do you like? slimy, scaly, or furry? furry
How many eyes do you want your pet to have? 1
You want a pet with 1 eye.
We have a match. It is Cyclopee. He likes to eat worms and sleep.
```

▷ Apply your skills to test the program again. Pick a different value such as 2 or 3.

Make a Match if the Person Wants More than 3 Arms

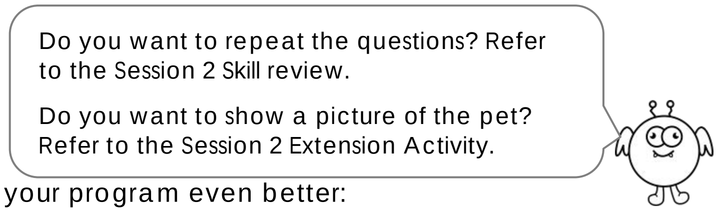
12. ▷ Ask another question and store the answer as the variable *arms*. Add the logic:

```
arms=input('How many arms do you want your pet to have? ')
num_arms=int(arms)
if num_arms>3:
    print('You want a pet with', num_arms, 'arms.')
    print('We have a match. Describe the pet. Refer to Assignment 7.')
    break
else:
```

▷ Apply your skills to test the program. Test it with 2 arms. Test it again with 4 arms.

```
Do you want a pet with horns? yes or no no
What type of body do you like? slimy, scaly, or furry? furry
How many eyes do you want your pet to have? 3
How many arms do you want your pet to have? 2
We do not have a matching pet.
```

▷ Close the Python Shell.


Do you want to repeat the questions? Refer to the Session 2 Skill review.
Do you want to show a picture of the pet? Refer to the Session 2 Extension Activity.

Take the Coding Challenge

13. Pick from the options below to make your program even better:

- ☐ Add a period to complete the sentence about the body: *You answered slimy.*
- ☐ Add the text *Let's keep looking* before the body, eyes, and arms questions.
- ☐ Add the question, *Do you want a pet with wings?*
  If yes, the person should match to a pet.
- ☐ Add the question, *How many legs do you want your pet to have?*
  If the number is greater than 2, the person should match to a pet.

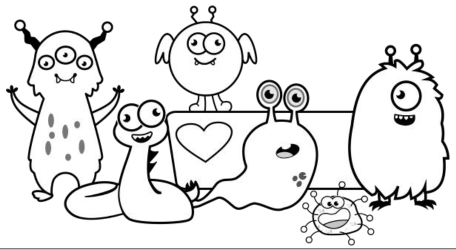
Close Python

Session 2 Peer Review: Rescue a Pet Monster

Invite a friend to adopt a pet monster.

1. Decide how to share the file. The Pet Rescue Mission program can be open on your device. You can also send the player the monster.py file by email or a file sharing service.

2. Get feedback! Ask the person to answer the questions below after they are done.



Pet Monster Rescue Feedback

Pet Owner:	
Programmer Name:	

1. Did you find a pet? ☐ yes ☐ no

2. If yes, describe your new pet.

Name:	
Food:	
Play:	

3. What ONE thing do you like about the program?

☐ It was easy to use.

☐ The questions made you feel as if the pet you wanted was important.

☐ The matching pet was one you would like to own.

☐ The pet was creative or funny.

☐ Other:

4. What ONE thing do you think the programmer should change to make it *even* better?

☐ Add a blank line between questions to make it easier to read.

☐ Add titles to divide the text such as ***Get to Know Pet Owner*** or ***Find a Pet***.

☐ Display a message that invites people to run the program again.

☐ Change a monster's name to

☐ Other:

Session 2 Review: About Strings, Integers, and Variables

1. Match the programming term to its meaning.

variable	integer	string	comment

a. string Text such as a word, phrase, or sentence.

b. comment Note to a programmer about the code.

c. integer Whole number.

d. variable A stored value that can change.

/4

---

2. Complete each string using the correct symbols.

"	\	'

a. print(' I can program ')

b. print(" let's code ")

c. print('I said, "let \ 's code" ')

/3

Pick the correct code for the output.

3. **10**

   a. `print('5+5')`

   b. **`print(5+5)`**

   c. `print("6+4")`

4. **Hello Beth**

   a. **`name=('Beth')`**
      `print('Hello', name)`

   b. `name=('Beth')`
      `print('Hello name')`

   c. `name=('Beth')`
      `print('Hello'+name)`

/2

Check if a statement about variables is true or false.

5. A variable name can start with a number. ☐ true [✓ ☐ false]

6. The value of a variable can change. [✓ ☐ true] ☐ false

7. A variable name can have a space. ☐ true [✓ ☐ false]

8. The user can set the value of a variable. [✓ ☐ true] ☐ false

9. A variable value can be a string or an integer. [✓ ☐ true] ☐ false

/5

---

10. Complete the code with the correct Python command.

print	while	if	input

a. `name=` input `('What is your name?')`

b. print `('I like to code.')`

c. while `True:`

d. if `answer=='yes':`

/4

Turn each sentence into code with the correct logical operator. Pick from the options below:

==	!=	<	>

11. if the answer is yes, then show the word *great*

```
if answer  ==  'yes':
    print('great')
```

12. if the score is greater than 4, end the game

```
if score  >  4:
    print('game over')
    break
```

/2

TOTAL: /20

Session 2 Skill Review: Loop the Questions to Try Again

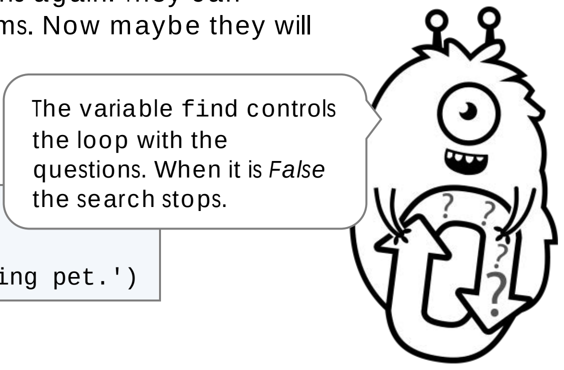
The Pet Monster Rescue program helps people find their ideal pet. It does this by asking questions. If there is a match to a pet in the shelter, the person can take their new pet home. However, if there is no match, the person cannot adopt a pet.

Help people find a pet!

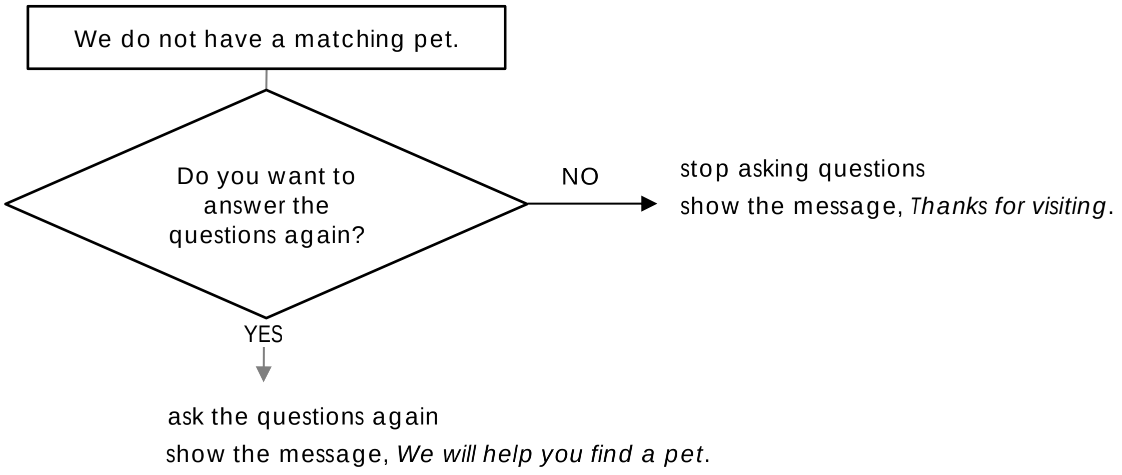
Create a loop that lets the person answer the questions again. They can change their mind about the horns, body, eyes, or arms. Now maybe they will find a match and get to take their new pet home.

You need to edit the logic in the *else* code.
Right now, it looks like this:

```
else:
  find=False
  print('We do not have a matching pet.')
```


The variable find controls the loop with the questions. When it is *False* the search stops.
? ?
?
?

The *else* code needs to work like this instead:


We do not have a matching pet.
Do you want to answer the questions again?
NO
stop asking questions
show the message, *Thanks for visiting*.
YES
ask the questions again
show the message, *We will help you find a pet*.

Turn the Plan into Code

Complete the code to ask the person if they want to answer the questions again.

else	input	False	==

```
else:
     print('We do not have a matching pet.')
     answer= input ('Do you want to answer the questions again? ')
     if answer == 'no':
          find= False
          print('Thanks for visiting.')
     else :
          print('We will help you find a pet.')
```

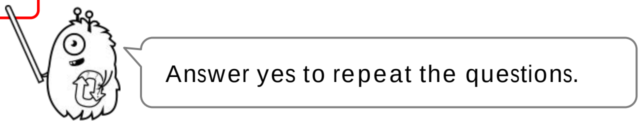
Loop the Questions

1. Open monster.py in IDLE (Python).
2. View *else* at the bottom of the program. Delete find=False.

```
else:
  find=False  delete
  print('We do not have a matching pet.')
```

3. Refer to code on the previous page to edit the program.
   Ask the person if they want to answer the questions again.
4. Test the program. Answer the questions so that there is NO MATCH.
   At the end, answer yes to have the questions asked again.

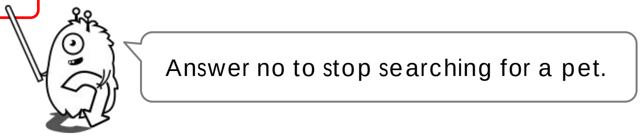
```
Do you want a pet with horns? yes or no no
What type of body do you like? slimy, scaly, or furry? furry
How many eyes do you want your pet to have? 2
How many arms do you want your pet to have? 3
We do not have a matching pet.
Do you want to answer the questions again? yes
```



```
We will help you find a pet.
Do you want a pet with horns? yes or no
```

5. Test the program. Answer the questions so that there is NO MATCH.
   At the end, answer no to stop the loop.

```
Do you want a pet with horns? yes or no no
What type of body do you like? slimy, scaly, or furry? furry
How many eyes do you want your pet to have? 2
How many arms do you want your pet to have? 3
We do not have a matching pet.
Do you want to answer the questions again? no
```



```
Thanks for visiting.
```

Answer Questions about the Program

1. Which line of code stops the program from looping?
   a. `else:`
   b. **`find=False`**
   c. `print('We do not have a matching pet.')`
2. Do you like the program more now that the person can answer the questions again?
   Why or why not?

Close Python

Session 2 Extension Activity 1: Open a Pet Monster Picture

The new pet owner may want to see a picture of their pet.

Python has libraries with special functions. The *webbrowser* library has commands to display web-based documents such as images or web pages on the Internet.

Follow the instructions to add code to open a picture of the pet when a person finds a match:

CODE	PURPOSE
`import webbrowser`	get commands from the webbrowser library
`webbrowser.open("https://www.website.com/image.png")`	open an image file on the Internet

Show a Pet Monster with Horns

1. Open monster.py in IDLE (Python).

2. Import the *webbrowser* library. Add the code to the first line of the program.

```
import webbrowser

#variables
place=('Pet Monster Rescue')
find=True
```

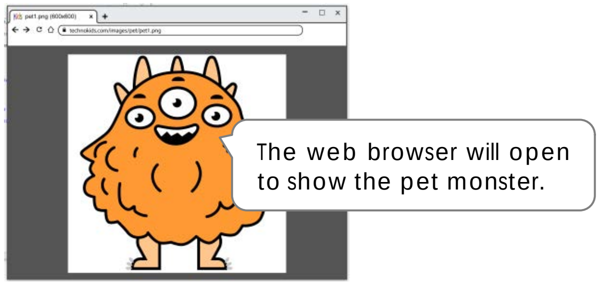
3. The first monster has horns. The web address with a picture of this pet is: https://www.technokids.com/images/pet/pet1.png

   Add the code: **`webbrowser.open("https://www.technokids.com/images/pet/pet1.png")`**

```
    horns=input('Do you want a pet with horns? yes or no ')
    if horns=='yes':
        print('We have a match.')
        print('It is Furhop. He likes to eat pizza and play ring toss.')
        webbrowser.open("https://www.technokids.com/images/pet/pet1.png")
        break
```

4. Test the program. When you are asked if you want a pet with horns, type yes.

```
Do you want a pet with horns? yes or no yes
We have a match.
It is Furhop. He likes to eat pizza and play ring toss.
```



5. Close the browser window. X

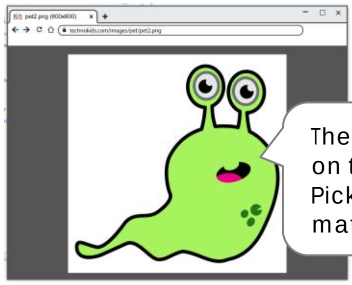
6. The second monster is not furry. The web address with a picture of this pet is: https://www.technokids.com/images/pet/pet2.png

   Add the code: **webbrowser.open("https://www.technokids.com/images/pet/pet2.png")**

```
    body=input('What type of body do you like? slimy, scaly, or furry? ')
    if body!='furry':
        print('You answered', body+'.')
        print('We have a match. It is Slimo. He likes to eat bugs and swim in mud.')
        webbrowser.open("https://www.technokids.com/images/pet/pet2.png")
        break
```

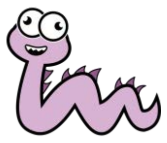
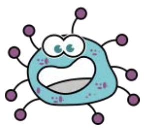
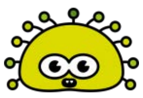
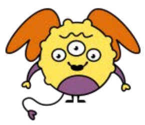
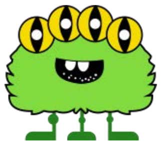
7. Test the program. When you are asked about the body, type slimy.

```
Do you want a pet with horns? yes or no no
What type of body do you like? slimy, scaly, or furry? slimy
You answered slimy.
We have a match. It is Slimo. He likes to eat bugs and swim in mud.
```



The pictures are in a *pet* folder on the TechnoKids website. Pick the ones you want to match your monsters.

8. Apply your skills to add a picture for each monster. Refer to the table below for the URL.

https://www.technokids.com/images/pet/pet1.png	https://www.technokids.com/images/pet/pet2.png	https://www.technokids.com/images/pet/pet3.png
https://www.technokids.com/images/pet/pet4.png	https://www.technokids.com/images/pet/pet5.png	 https://www.technokids.com/images/pet/pet6.png
 https://www.technokids.com/images/pet/pet7.png	 https://www.technokids.com/images/pet/pet8.png	 https://www.technokids.com/images/pet/pet9.png
https://www.technokids.com/images/pet/pet10.png	https://www.technokids.com/images/pet/pet11.png	 https://www.technokids.com/images/pet/pet12.png

Take the Challenge! Add a time delay between the description and picture.

```
import time
```

Where should this go? Start or end of the program?

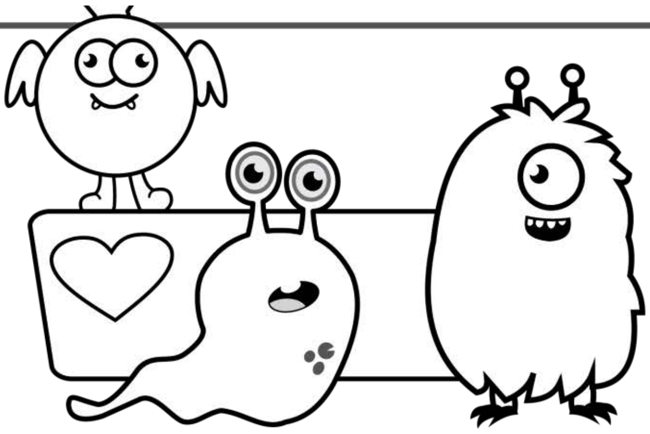
```
time.sleep(5)
```

Add this line for each pet monster.

Session 2 Extension Activity 2: Pet Monster Rescue Mission

Great work! You have completed the Pet Monster Rescue Mission. To build the code was a four-part mission. Read each step to review the programming skills you have learned.

Pet Monster Rescue



1

Prepare for the Mission

Write code with strings, integers, and variables.

2

About the Pet Monster Rescue

Apply what you know about strings and variables to inform others about Pet Monster Rescue.

3

Be Logical – Organize Ideas

Complete the algorithm to describe each monster. Understand the logic.

4

Build Decision Making into Code

Ask questions to match a person to their pet. Use if and else statements.

Loop the Questions
Ask the questions again.

Pet Monster Picture
Open an image.

Programmers Are Logical

To complete the Pet Monster Rescue mission, you had to think logically. This is a valued trait in a programmer. Answer the questions to explain how being logical helped you finish the tasks.

1. A programmer carefully watches what is happening.

   How does testing a program to see the output help you to write better code?

2. A programmer pays attention to details.

   Pick one of the items from the list. Explain why it is important when writing code.

   ☐ spell each Python keyword correctly

   ☐ use the proper punctuation such as brackets, commas, or colons

   ☐ indent a block of instruction to group them together

   ☐ sequence instructions in the correct order

3. A programmer outlines their ideas clearly.

   In the Pet Monster Rescue Mission, you organized your ideas for each pet monster into a flowchart. How did your plan help you complete the program?

4. A programmer divides their ideas into smaller parts.

   When you wrote your program, you chunked the code into parts using comments. How will comments help others understand your program?

5. A programmer considers if a statement is true or false.

   You used logic in your program to match a person to a pet monster. Which type of logic did you find most difficult to understand.

   ☐ logical operators == != < >

   ☐ if and else statements

   ☐ instructions that run if a variable is True or False

   When did the logic become easy to understand? Or, are you still a bit confused?

Appendices

Refer to the appendices for additional resources:

Pet Monster Rescue Marking Sheet

Task: Design a program for the Pet Monster Rescue. Ask questions to match people to their ideal pet. Use logical operators to make decisions based upon the pet owner's answers.

Work with Strings and Variables	
User can input answers to questions that are stored as variables. Output combines text with variable values to create sentences. Each sentence has spaces between words and the proper punctuation.	/10
Control Actions using Logic	
Search for a pet is controlled using a while loop that switches from True to False. Program correctly finds a match using if statements and logical operators (==, !=, <, >). Questions continue if there is no match using an else statement.	/10
Produce an Original Program	
Text is easy to read. Program personalizes the pet adoption process by responding to user's input. Descriptions of pets are creative and original. (name, food, and play) Extra coding has been added to enrich the game design (formatted output, additional pet monsters, pictures of pets)	/10
TOTAL:	/30