

Animal Tracking and Variables

Textbook

Animal Tracking and Variables



Foundation

A [variable](#) is a building block of programming that allows you to store data. Think of it like a "box" that can store anything you put in it.

1. You can name "the box", or variable anything you want and you can put any type of data inside. You'll learn more about different data types in a later section. **The name of the variable must either be one word, or connected with underscores.** `pet = "dog"` or `my_pet = "dog"`
2. You do not need to specify anything before declaring a variable, unlike other programming languages.
3. You use the equal sign = to assign the data to the variable or "put it in the box."



Creating variables

The example below has a variable named `distance` that has the number 20 stored inside it. It also has a variable named `temperature` that has the number 10 stored inside it.

```
1 distance = 20
2 temperature = 10
3
```

Variables can only be one word long. We can get around this rule by separating words with underscores.

```
1 distance_today = 20
2 temperature_today = 10
```

Outputting variables

After creating these variables in your python code you can use the print functions we used earlier to [output](#) the variables. The code below will print out the name and number that we stored in the name and number variables.

```
1 distance_today = 20
2 temperature_today = 10
3
4 print(distance_today)
5 print(temperature_today)
6
```


Try it!

When you want to store a word or phrase inside a variable you need to put quotes around it. Numbers, on the other hand, don't need any extra punctuation. This will be explained in greater detail in later sections.

```
1 animal = "bluefin tuna"
2 second_animal = "albatross"
3
4 print(animal)
5 print(second_animal)
```

Try it!

VARIABLES

Python



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Checkpoint

Animal Tracking and Variables

Create 2 variables. Set one equal to a number and one equal to a string. Print the variables in separate print statements.

Requirements:

- Create a variable with a whole number inside.
- Create a variable with a string inside.
- Print both variables in separate print statements.

Questions (6)

1. What is a building block of code that allows you to store data in it like a box?

MULTIPLE CHOICE

Choose the correct answer:

- A. attribute
- B. output
- C. name
- D. variable

2. What is the best practice when creating variables?

MULTIPLE CHOICE

Choose the correct answer:

- A. Name your variable something that refers to what it holds.
- B. Use letters like x, y, or n to make code as short as possible.
- C. Use more than one word when naming a variable to make it specific..
- D. Use one syllable words when creating variables.

3. Edit the text box below to debug (fix) the code:

DEBUG CODE

Code to Debug:

```
1 class_pet : "snake"
```

4. Edit the text box below to debug (fix) the code:

DEBUG CODE

Code to Debug:

```
1 friend = "Marie"
```

5. Edit the text box below to debug (fix) the code:

DEBUG CODE

Code to Debug:

```
1 age : 14
```


6. True or False: Printing a variable is a way to output a variable.

Choose the correct answer:

- A. True
- B. False

Challenges (3)

1. Animal Names

You are a scientist at a pacific marine biologist facility. You are interested in tracking specific marine animals to understand their patterns. You are choosing which species to track.

Create 3 variables. For each variable, assign it to the name of different marine animal you would like to track.

Print out each variable.

Requirements:

- Create 3 variables named "first_animal", "second_animal", and "third_animal".
- Print out each of the variables.

2. Field Notes

Pretend you are a scientist at a marine biology reserve. You are studying elephant seals and are trying to understand their patterns.

Go <http://oceantracks.org/map/>.

The red line and dots represent the movements of a single elephant seal over the course of a year. In the upper left hand corner is a tab that says Data and Tools. Select Tracks. Then select **Elephant Seal**.

Then at the bottom choose **Show All**.

This will show the movements of many elephant seals over the course of a year. Consider the following questions:

- What patterns do you see?
- Where do the seals tend to return to every year?
- Why do you suppose these patterns exist?
- What kind of resources, temperatures, food, or human populations might affect the patterns of elephant seals?

Create a program that prints out some observations and notes you observed from the ocean tracking website. Each note will answer one of the above questions.

1. Create four variables named `note1` , `note2` , `note3` , `note4` .
2. Assign each variable to an observation that answers the above questions.
3. Print each variable in a separate print statement.

Don't forget to wrap your notes in quotation marks!!

Requirements:

- 4 variables named note1, note2, note3, and note4 set equal to a sentence answer.
- Print each variable in a separate print statement.

Answer Keys & Solutions

Checkpoint Solutions

Animal Tracking and Variables

```
1 distance = 12
2 animal = "shark"
3
4 print(distance)
5 print(animal)
```

Questions

1. What is a building block of code that allows you to store data in it like a box?

MULTIPLE CHOICE

Correct Answer:

- A. attribute ✗ Incorrect
- B. output ✗ Incorrect
- C. name ✗ Incorrect
- D. variable ✓ Correct

2. What is the best practice when creating variables?

MULTIPLE CHOICE

Correct Answer:

- A. Name your variable something that refers to what it holds. ✓ Correct
- B. Use letters like x, y, or n to make code as short as possible. ✗ Incorrect
- C. Use more than one word when naming a variable to make it specific.. ✗ Incorrect
- D. Use one syllable words when creating variables. ✗ Incorrect

3. Edit the text box below to debug (fix) the code:

DEBUG CODE

Incorrect Code:

```
1 class_pet : "snake"
```

Correct Solution:

```
1 class_pet = "snake"
```

Explanation:

When declaring variables, use an equals sign.

4. Edit the text box below to debug (fix) the code:

DEBUG CODE

Incorrect Code:

```
1 friend = "Marie
```

Correct Solution:

```
1 friend = "Marie"
```

Explanation:

There is a missing quotation mark "

5. Edit the text box below to debug (fix) the code:

DEBUG CODE

Incorrect Code:

```
1 age : 14
```

Correct Solution:

```
1 age = 14
```

Explanation:

Python doesn't need a semicolon at the end. Numbers don't need quotation marks.

6. True or False: Printing a variable is a way to output a variable.

MULTIPLE CHOICE

Correct Answer:

A. True

✓ Correct

B. False

✗ Incorrect

Explanation:

Outputs are ways to see or use variables

Challenges

1. Animal Names

Solution:

```
1 first_animal = "shark"
2 second_animal = "whale"
3 third_animal = "albatross"
4
5 print(first_animal)
6 print(second_animal)
7 print(third_animal)
```

2. Field Notes

Solution:

```
1 note1 = "The elephant seals mostly head north every year."
2 note2 = "Many elephant seals return to the coast of California every year."
3 note3 = "The seals might have this pattern because of water temperatures."
4 note4 = "Perhaps food is more plentiful off the coast of California in the winter.
5         There also might be better opportunities to mate."
6 print(note1)
7 print(note2)
8 print(note3)
9 print(note4)
```