

08/18/2022 4:46:54 PM

Run Audio Tour

```

1 height = 67 # in inches (60 inches is 5 feet)
2 weight = 140 # in pounds
3 height_squared = height * height
4 bmi = weight / height_squared
5 bmi_metric = bmi * 703
6 print("BMI:")
7 print(bmi_metric)
8

```

BMI:
21.92470483403876

ActiveCode: 1 (BMI)

Change the value of the `height` variable in the program from `60` to `52`. Press the `Run` button again and notice the change in output. Change the value of the `weight` variable from `110` to `95` and run the program again. Finally, change the value of `bmi_metric` from `bmi * 703` to `bmi * 73`.

This last change is an error. You can press the `Load History` and use the slider to step back through the changes you made to the original version of the program.

csp-1-3-1: Imagine that you are 5 foot 7 inches and weighed 140 pounds. What will this program print for your BMI?

- A. 21.9
- B. 21.92470483403876
- C. 21
- D. 22

Check Me

Yes!

- You create a variable to give a name to a number
- Using variables you are able to do math problems effortlessly

csp-1-4-1: What would the following code print?

```

first = "Hi"
next = "There"
print ((first + next) * 2)

```

- A. Hi There
- B. HIThere
- C. Hi There Hi There
- D. HIThereHIThere
- E. HIThere2

Check Me

Yes. Strings are added together without adding any space and they are repeated without adding a space.

- Strings are sequences of characters such as "Hi"
- Two operators are `+` for addition and `*` for multiplication but with strings, the `+` combines two strings, and the `*` is used to repeat strings
- The way to tell a string to change is dot-notation
- Strings without spaces are going to appear together

csp-1-5-1: Which direction will alex move when the code below executes?

```
from turtle import *  
space = Screen()  
alex = Turtle()  
alex.forward(100)
```

- A. North
- B. West
- C. South
- D. East

Check Me

Just by going forward, backward, left, and right, we can have a turtle draw a shape.

What shape will the program below draw when you click on the Run button?

Square

Check Me

Correct!

- Using “from “ “ import” you can read a library that contains code
- If a line starts with # the rest of the line will be comments and not taken into actual code
- Using dot-notation you can tell where you want the turtle to go

Run Audio Tour

```
1 from PIL import Image
2
3 # Create an image from a file
4 img = Image.open('arch.jpg')
5
6 # Get its dimensions
7 width = img.size[0]
8 height = img.size[1]
9
10 # Loop through all the pixels
11 pixels = img.load()
12 for col in range(width):
13     for row in range(height):
14         r, g, b = pixels[col, row] # Read pixel color
15         pixels[col, row] = (0, 0, 0) # Set red value to 0
16
17 # Show the changed image
18 img.show()
19
```

ActiveCode: 1 (Images_1)

csp-1-6-2: What do you think happens when you set all the colors to 0? Try changing (0, 0, 0) in line 15 to (0, 0, 0) and run it to check.

A. You still see the picture, but it is all in shades of gray.

B. The picture is all white.

C. The picture is all black.

Check Me

Black is the absence of light so setting all colors to 0 results in an all black image since there is no light.

- Pictures on a computer screen are broken up into bits called pixels
- Pixels are laid out on a grid (x,y) from left to right
- Each pixel has an amount of blue, green, and red added to it. This can be from 0-255
- If all color values are 0 then the picture is black
- Code is a set of instructions that a computer can understand sometimes called a program
- Dot-Notation is how you ask an object to do something in python