Anatomy quiz

Level 1- Python

{4}

Python & Java 4 Teachers

Introduction

{4}

Python & Java 4 Teachers

From digesting what we eat and drink, to controlling how hot or cold we are, to growing our hair and fingernails, the human body works in weird and wonderful ways to keep us in top shape.

However, how much do you really know about the way the human body works? Do you think you could answer 10 super tricky questions about the human body?

Task

- Create a quiz game about the human body to test your knowledge on the anatomy of humans

{4}

Python & Java 4 Teachers

Process

This program should:

✓Ask the user a series of questions

✓Compare the users input to the answer stored

✓If the user gets the answer correct, 1 is added to their score

✓If the user gets the answer incorrect, they should be told the correct answer

✓Display the final score to the user

{4}

Python & Java 4 Teachers

Input and Output

{4}

Python & Java 4 Teachers

Output is the process of supplying information to the user.

In python, we use the print() statement.

```python
print("Hello World!")
```

Input is the process of receiving information from the user.

We do this using the input() statement.

We can store the user's data in variables!

```python
print("What is your name?: ")
name = input()
```

Step 1

Keeping score and outputting the name of the quiz

We will declare the variable (temporary place in memory for data that can be changed during the running of the program) at the at the start of the program, on line 1

```
1 print("Welcome to the anatomy quiz!")
2 score=0
```

When the user gets the answer correct in the quiz, 1 will be added onto the score (coded for later on)

```
score=score+1
```

Arrays

{4}

Python & Java 4 Teachers

An array is a container which can hold a fixed number of items of the same type.

Each item stored in an array is called an element, and its index is the position where it is within the array

If you have a list of items (for example car names) storing the values individually means that it can be had to find a specific value (especially if you want to store 300 cars not 3)

```
car1 = "Audi"
car2 = "BMW"
car3 = "Volvo"
```

```
cars = ["Audi", "BMW", "Volvo"]
print(cars)
```

Step 2

Setting up the question and answer arrays

As you can see, each element in the array is enclosed around by speech marks, and has a comma afterwards. The ends of the array (start and end) have an opening and closing square bracket respectably

```
3  questions=["1. What is the name of the biggest part of the human brain?",
4            "2. The coloured part of the human eye that controls how much light passes through the pupil is called the?",
5            "3. What is the name of the substance that gives skin and hair its pigment?",
6            "4. The muscles found in the front of your thighs are known as what?",
7            "5. True or false? The two chambers at the bottom of your heart are called ventricles.",
8            "6. What substance are nails made of?",
9            "7. What is the human body's biggest organ?",
10           "8. The innermost part of bones contains what?",
11           "9. True or false? An adult human body has over 500 bones.",
12           "10. How many lungs does the human body have?"]
13 answers=["The cerebrum",
14          "Iris",
15          "Melanin",
16          "Quadriceps",
17          "True",
18          "Keratin",
19          "The skin",
20          "Bone marrow",
21          "False (there are 206)",
22          "2"]
```

Change the questions and answers to whatever you want that links to the anatomy- just make sure the indexes match up!

Loops

{4}

Python & Java 4 Teachers

A loop is a sequence of instructions that is continually repeated until a certain condition is reached.

In Python there are two main loops: 'WHILE Loops' and 'FOR Loops'

While Loops are condition controlled and will repeat until their condition is false.

```
1
2  condition = True
3  while condition:
4      print("Repeating...")
5
6      print("Finish loop?")
7      finished = input()
8
9
10     if finished == "Y":
11         condition = False
12
```

```
Repeating...
Finish loop?
N
Repeating...
Finish loop?
N
Repeating...
Finish loop?
N
Repeating...
Finish loop?
Y
```
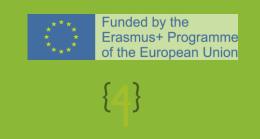
For loops are count controlled and will repeat a set number of times.

```
for i in range(5):
    print(i)
```

```
0
1
2
3
4
```

Step 3

For loop

The following block of code (that is indented after the for loop has been declared) will repeat 10 times (for each of the 10 questions and answers in the arrays)

```
24 for i in range (10):
```

Accessing elements in arrays

You can refer to an array element using its index number (the number of the position that the element is in)

```
cars = ["Audi", "BMW", "Volvo"]

fcar = cars[0]

print(fcar)
```

To get the value of the first array item in this list:
- Use the square brackets []
- For the first element, the index will be 0 (0 index in python means we don't start counting from one- so technically the 0th element of the list rather than the 1st)

If we wanted to print the second element instead, 1 would go in the square brackets and so on

Step 4

Accessing elements in the array

This code will mean that each time the code is run, the user will be given the opportunity to enter an input to the next question.

```
24 for i in range (10):
25     userAnswer=input("Question "+questions[i])
```

Here, "i" is used in the square brackets, where "i" is the variable that holds the amount of times that the for loop has been run for.

The user's answer is stored in the variable "userAnswer"

{4}

Python & Java 4 Teachers

If statements

{4}

Python & Java 4 Teachers

```python
if character in alphabet:
    print ("the character is in the alphabet")
else:
    print ("the character is NOT in the alphabet")
```

The IF statement is a decision-making statement that guides a program to make decisions based on specified criteria.

The IF statement executes one set of code if a specified condition is met (TRUE) or another set of code evaluates to FALSE.

Step 5

If the user gets the answer correct…

Using the principles of if statements on the following slide, as well as our knowledge about accessing elements of an array, the contents of the userAnswer variable is compared to the answer stored in the array for the current question.

```
26        if userAnswer==answers[i]:
27            print("Correct!")
28            score=score+1
```

If the user does get the answer correct, then 1 is added onto their score

Step 6

If the user gets the answer incorrect…

If the user enters an answer that does not match the one in the list (an incorrect answer), then this print statement will be displayed, where the user is told that they have gotten the answer wrong, and they are given the correct answer

```
29    else:
30        print("Sorry that was incorrect! The correct answer is "+answers[i])
```

The + sign is the **concatenation sign** and just means that the text (string) in green will be printed alongside the item located at position i

{4}

Python & Java 4 Teachers

, VS +

{4}

Python & Java 4 Teachers

```
string="My name is..."
print("The string is: "+string)
```

```
The string is: My name is...
```

+ is the concatenation operator and will join two strings together in a print statement

```
integer=4
print("The number is: ",integer)
```

```
The number is:  4
```

, is used when you want to output two different data types in a print statement. The string in quotation marks and the integer are different data types and so + cannot be used

Step 8

Outputting the final score…

```
32 print("Your final score is: ",score)
```

The final score is then outputted to the user (note the use of , rather than + due to score being an integer)

{4}

Python & Java 4 Teachers

What the code should look like…

```python
1  print("Welcome to the anatomy quiz!")
2  score=0
3  questions=["1. What is the name of the biggest part of the human brain?",
4          "2. The coloured part of the human eye that controls how much light p
5          "3. What is the name of the substance that gives skin and hair its pi
6          "4. The muscles found in the front of your thighs are known as what?"
7          "5. True or false? The two chambers at the bottom of your heart are c
8          "6. What substance are nails made of?",
9          "7. What is the human body's biggest organ?",
10         "8. The innermost part of bones contains what?",
11         "9. True or false? An adult human body has over 500 bones.",
12         "10. How many lungs does the human body have?"]
13 answers=["The cerebrum",
14         "Iris",
15         "Melanin",
16         "Quadriceps",
17         "True",
18         "Keratin",
19         "The skin",
20         "Bone marrow",
21         "False (there are 206)",
22         "2"]
23
24 for i in range (10):
25     userAnswer=input("Question "+questions[i])
26     if userAnswer==answers[i]:
27         print("Correct!")
28         score=score+1
29     else:
30         print("Sorry that was incorrect! The correct answer is "+answers[i])
31
32 print("Your final score is: ",score)
```

```
Welcome to the anatomy quiz!
Question 1. What is the name of the biggest part of the human brain?PASS
Sorry that was incorrect! The correct answer is The cerebrum
Question 2. The coloured part of the human eye that controls how much light passes through the pupil is called the?PASS
Sorry that was incorrect! The correct answer is Iris
Question 3. What is the name of the substance that gives skin and hair its pigment?PASS
Sorry that was incorrect! The correct answer is Melanin
Question 4. The muscles found in the front of your thighs are known as what?PASS
Sorry that was incorrect! The correct answer is Quadriceps
Question 5. True or false? The two chambers at the bottom of your heart are called ventricles.True
Correct!
Question 6. What substance are nails made of?PASS
Sorry that was incorrect! The correct answer is Keratin
Question 7. What is the human body's biggest organ?The skin
Correct!
Question 8. The innermost part of bones contains what?Bone marroq
Sorry that was incorrect! The correct answer is Bone marrow
Question 9. True or false? An adult human body has over 500 bones.True
Sorry that was incorrect! The correct answer is False (there are 206)
Question 10. How many lungs does the human body have?2
Correct!
Your final score is:  1
```

Conclusion

Learning outcomes- After this lesson you should be able to:

✓**Print outputs and use input to get inputs to and from the user**

✓**Use if statements**

✓**Create an array**

✓**Access elements in an array**

✓**Use if statements**

✓**Use a simple for loop**

Links to everyday life…

Play-Work

{4}

Python & Java 4 Teachers

Play –children can test each other and compare scores

Work- links to school work and human biology, whilst still remaining fun and interactive

Online examples on quizzes about the human body for kids:
➢ https://kidshealth.org/en/kids/bodyquizzes.html

Congratulations!

You have created a quiz game about the human body!

{4}

Python & Java 4 Teachers