Computing

Lesson 5: Make a thing

Python programming with sequences of data

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for practise on strings

Task 1 Count the vowels

To complete this task, you must end up with a program that prompts the user for a sentence, and then counts and displays the number of vowels in that sentence.

Example

Note: Use this example to check your program. This is the output your program should produce when provided with this particular input.

The program prompts the user for a sentence	`Enter a sentence:`
The user types in a reply	`A foolish consistency is the hobgoblin of little minds`
The program displays the number of vowels in the sentence	`16 vowels in this sentence`

Task 1 Count the vowels

Step 1

Open this program **oaknat.uk/comp-oak-vowels** in Repl.it. The lines of code are in **no particular order**. Some are **incomplete** and some **require indentation**.

```
sentence = input()
vowel_count = 0
vowel_count = vowel_count + 1
vowels = "aeiouAEIOU"
print(vowel_count, "vowels in this sentence")
print("Enter a sentence:")
if character in          :
for character in          :
```

Task 1 Count the vowels

Step 2

Rearrange these lines, fill in the **gaps**, and **add indentation** where appropriate, so that your program prompts the user for a **sentence**, and then **counts** and displays the number of **vowels** in that sentence.

Example input and output can be seen on slide 3.

Task 2   Sum the digits

To complete this task, you must end up with a program that prompts the user for a number, and then computes and displays the sum of the number's digits.

Example

Note: Use this example to check your program. This is the output your program should produce when provided with this particular input.

The program prompts the user for a number	`Enter a number:`
The user types in a reply	`51324`
The program displays the sum of the number's digits	`Sum of digits in 51324 is 15`

Task 2   Sum the digits

Step 1

Open this program **oaknat.uk/comp-oak-sum** in Repl.it. The lines of code are in **no particular order**. Some are **incomplete** and some **require indentation**.

```
number = input()
sum = 0
sum = sum +
print("Sum of digits in", number, "is", sum)
print("Enter a number:")
for           in           :
digit = int(character)
```

Task 2   Sum the digits

Note: The user is prompted for a number, but the `number` variable is a string, so that `for` can be used to iterate over each individual character of that string. The `int` function is applied to each individual character, instead of the entire number.

Note: For the purposes of this task, you can assume that the user will indeed provide a `number`. If they don't, the program will terminate with a `ValueError` but you don't need to worry about that.

Step 2

Rearrange these lines, fill in the gaps, and add indentation where appropriate, so that your program prompts the user for a number, and then computes and displays the sum of the number's digits.

Mini project

You will create a Python program that asks the user three questions about the order of the planets in our solar system. Each question will be of a different type.

Task 1   Ask for a planet's position

For the first question, your program should randomly select a planet, display its name, and ask the user for its position in the solar system, with respect to the Sun.

Example: Correct answer

Note: This example illustrates how your program should work. The output of your program will depend on the randomly-selected planet and the user's input, so it will be different each time you execute it.

The program displays a prompt and waits for keyboard input

```
What is the position of Earth, relative to
the Sun?
```

The user types in a reply

```
3
```

The program displays a message that the user's answer is correct

```
That is correct.
Earth is planet number 3 from the Sun.
```

Task 1 Ask for a planet's position

Example: Incorrect answer

Note: This example illustrates how your program should work. The output of your program will depend on the randomly-selected planet and the user's input, so it will be different each time you execute it.

The program displays a prompt and waits for keyboard input	`What is the position of Mars, relative to the Sun?`
The user types in a reply	`5`
The program displays a message that the user's answer is incorrect, along with the correct answer	`That is not correct.` `Mars is planet number 4 from the Sun.`

Task 1   Ask for a planet's position

Checklist: Tick (✔️) the corresponding box if your program:

❏   Randomly selects a planet for the first question.

❏   Displays the name of the randomly-selected planet and asks the user for its position in the solar system (see examples).

❏   Displays a message that informs the user whether or not the answer was correct.

❏   Displays the correct answer (even when the user's answer was correct; see examples).

Task 2 Ask for a planet's name

For the second question, your program should randomly select a planet, display its position in the solar system, and ask for the planet's name.

Example: Correct answer

Note: This example illustrates how your program should work. The output of your program will depend on the randomly-selected planet and the user's input, so it will be different each time you execute it.

The program displays a prompt and waits for keyboard input	`What is the name of planet number 3 from the Sun?`
The user types in a reply	`Earth`
The program displays a message that the user's answer is correct	`That is correct.` `Earth is planet number 3 from the Sun.`

Task 2   Ask for a planet's name

Example: Incorrect answer

Note: This example illustrates how your program should work. The output of your program will depend on the randomly-selected planet and the user's input, so it will be different each time you execute it.

The program displays a prompt and waits for keyboard input	`What is the name of planet number 4 from the Sun?`
The user types in a reply	`Jupiter`
The program displays a message that the user's answer is incorrect, along with the correct answer	`That is not correct.` `Mars is planet number 4 from the Sun.`

Task 2   Ask for a planet's name

Checklist: Tick (✔) the corresponding box if your program:

❏   Randomly selects a planet for the second question.

❏   Displays the position of the randomly-selected planet in the solar system and asks for the planet's name (see examples).

❏   Displays a message that informs the user whether or not the answer was correct.

❏   Displays the correct answer (even when the user's answer was correct; see examples).