Computing

Lesson 3: Selection

Programming Part 2: Selection

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What will be the output?

Introduction

For each of these example programs, decide what will be displayed (output) based on the values that are inputted.

Task 1: `if`

Program 1

Copy and complete the table to state what will be the output based on the input:

```
1  print("Enter name:")
2  name = input()
3  if name == "Harry":
4      print("Are you a Prince?")
```

Input	Output
Harry	
Shariff	
Evelyn	

Task 1: `if`

Program 2

Copy and complete the table to state what will be the output based on the input:

```
1  print("Enter age:")
2  age = int(input())
3  if age > 25:
4      print("Wow that is old!")
```

Input	Output
25	
27	
12	

Task 2: `if-else`

Program 1

Copy and complete the table to state what will be the output based on the input:

```
1   print("Enter birth month (e.g. September):")
2   month = input()
3   if month == "June":
4       print("That is my favourite month")
5   else:
6       print("My birth month is June")
```

Input	Output
July	
June	
August	

Task 2: `if-else`

Program 2

Copy and complete the table to state what will be the output based on the input:

```
1    print("Guess a number between 1 and 10:")
2    number = int(input())
3    if number == 7:
4        print("You got it!")
5    else:
6        print("Incorrect")
```

Input	Output
6	
10	
7	

Task 3: `if-elif-else`

Program 1

Copy and complete the table to state what will be the output based on the input:

```
1  print("Guess a number between 1 and 10:")
2  number = int(input())
3  if number == 7:
4      print("You got it!")
5  elif number < 7:
6      print("Higher")
7  else:
8      print("Lower")
```

Input	Output
7	
9	
3	

Task 3: `if-elif-else`

Program 2

Copy and complete the table to state what will be the output based on the input:

```
1  print("Enter a number: ")
2  odd_even = int(input())
3  odd_even = odd_even % 2
4  if odd_even == 1:
5      print("Your number is odd")
6  elif odd_even == 0:
7      print("Your number is even")
```

Input	Output
67	
24	
93	

Chatterbot

Task 1: Predict

Take a look at the code on the next slide. Read it carefully and try to make a prediction about what might happen when this code is executed. Think what might happen based on different user inputs e.g. `anakin` / `bob`

Task 1: Predict

```python
1   print("What is your name?")
2   name = input().lower()
3   if name == "anakin":
4     print("How do you do Anakin!")
5   else:
6     print(f"Nice name, {name}")
7   print(f"So {name}, is it hot or cold where you are today?")
8   weather = input().upper()
9   if weather == "COLD":
10    print("You must be freezing!")
11  elif weather == "HOT":
12    print("Drink plenty of water")
13  else:
14    print("I can't advise you on that type of weather.")
15  print("Do you like the colour blue?")
16  likes_blue = input()
17  if likes_blue == "Yes":
18    print("I like blue too")
19  print("Have a good day! Bye!")
```

Task 2: Run

Open and **run** the file with this code.

Here's a copy of the program (**oaknat.uk/comp-ks4-chatterbot**).

Was your prediction correct? Did anything unexpected happen? Write down your thoughts.

Task 3: Investigate

Investigate the program using the steps below:

Step 1	Step 2	Step 3
Execute the code and type `ANAKIN` in upper case when asked what is your name. • What text is immediately output on the screen?	Execute the code again and type `anakin` in lowercase when asked what is your name. • What text is immediately output on the screen?	Go to line 2 and delete `.lower()` from the end of the line of code. Execute the code again and type `ANAKIN` in uppercase. • What text is immediately output on the screen?

Task 3: Investigate

Investigate the program using the steps below:

Step 4	Step 5	Step 6
Execute the code again and type `anakin` in lowercase when asked what is your name. • What text is immediately output on the screen?	Add the `.lower()` code back to the end of line 2. What function do you think `.lower()` performs? Hint: if you are unsure, enter this code `print(name)` at line 3 to print what has been held in the variable name.	Line 9 has `.upper()` at the end of the input. What function do you think it performs? Hint: use the same investigation techniques as above if you are unsure.

Task 3: Investigate

Investigate the program using the steps below:

Step 7	Step 8	Step 9
Why do you think `.lower()` and `.upper()` might be important when we are checking if conditions are `True` or `False`?	Lines 6 and 7 contain an `else:` and a `print` statement. Does the condition `name == "anakin":` need to be `True` or `False` for these lines of code to execute?	Lines 10 to 12 contain an `if-elif` statement. If the user enters `cold` to the weather question, what will be output on the screen directly after?

Task 3: Investigate

Investigate the program using the steps below:

Step 10	Step 11	Step 12

If the user enters `hot` to the weather question, what will be output on the screen directly after?	Lines 14 to 15 contains and `else` statement.
	
	What does the user need to enter for it to output `I can't advise you on that type of weather?`
		Lines 18 and 19 contain this code
		
		`if likes_blue == "Yes":`
		`    print("I like blue too")`
		
		What does the user need to enter for `I like blue too` to be output?

Task 3: Investigate

Investigate the program using the steps below:

Step 13

What is displayed on the screen if the user types **yes**, **YES** or anything else?

Task 4: Modify

Modification 1	Hint
Adapt the code on lines 17 and 18 so that the **input** is converted to **uppercase** and this is checked in the condition.	Take a look at line 8 and 9 to see how it has been achieved there.
	Remember to test your code.

Task 4: Modify

Modification 2	Hint
At line 6, introduce an `elif` branch that checks if the `name` is `Leia`. If the `name` is `Leia` then the message should display "`The force is with you`"	Look at the elif used for when the weather is hot to see how to structure the code. **Remember to test your code.** **Common errors checklist** ❑ the `elif` has been indented (make sure that it is in line with the if above) ❑ leia not written in lowercase inside the condition ❑ a colon `:` is missing from the end of the condition ❑ the print statement is not indented under the `elif`

Task 4: Modify

Modification 3	Hint
Use an `else` with the final if statement `if likes_blue == "YES":` If the user doesn't enter Yes when asked if they like blue then the program should output "`That's a shame because I really like blue`"	Remember that `else:` doesn't need a condition. **Remember to test your code.** **Common errors checklist** ❏ `else` has been spelt with a capital E ❏ the colon `:` is missing after the `else` ❏ the print statement underneath isn't indented

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