

Python Programming Challenges

Name	
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Complete the tasks enclosed and complete a self review for each task.

Eg:

	Your response
Completed successfully?	Yes or no
Did you have any errors?	Yes – syntax errors (write in the error) or No
How did you solve them?	How did you solve your errors/solve the problem? Explain what you did and use examples of code
What did you find difficult?	What was hard/did you struggle with?

- **Ask for help from others**
- **If you coach someone else through completing one of the challenges, keep a record of it on the coaching sheet on the first page**
- **Complete them in sequence and do not move on to the next challenge until you have successfully got the program running**
- **Make sure that you save your solutions to your Python Practice folder using ‘challenge no..’ as the file name**
- **Look at the programs that you have completed in previous lessons for help if you struggle**

Coaching record:

Person coached	Challenge	How I helped

Challenge 1

Practice task:

Write this program in Python:

```
print('Hello World!')
```

Challenge:

Write a program that says:

```
This is  
a computer program  
that prints on several lines
```

Self review:

	Your response
Completed successfully?	
Did you have any errors? What?	
How did you solve them?	
What did you find difficult?	

Challenge 2

Practice task:

Copy and run the following program:

```
name='Bob'  
print('Hello '+name)
```

Challenge task:

Complete the following program so it uses the variables to print out 'the cat sat on the mat'. It should print out on one line, with spaces.

E.g.

```
word1='the'  
word2='cat'  
word3='sat'  
word4='on'  
word5='the'  
word6='mat'  
[REMAINDER OF PROGRAM HERE]
```

Self review:

	Your response
Completed successfully?	
Did you have any errors? What?	
How did you solve them?	
What did you find difficult?	

Challenge 3

Practice task:

Copy and run the following program:

```
name=input('What is your name?')  
print('Hello '+name)
```

Challenge task:

Write a program that asks the user their name and then asks what their favourite food is, using their name in the question, and responds to their answer.

Self review:

	Your response
Completed successfully?	
Did you have any errors? What?	
How did you solve them?	
What did you find difficult?	

Challenge 4

Practice task:

Copy and run the following program

```
print(1+6)
print(7-5)
print(3*9)
print(7/2)
```

Challenge task:

Write a program that has 3 variables (a, b and c). a = 12 and b = 6.
c should be equal to a plus b. The program should print c.

Self review:

	Your response
Completed successfully?	
Did you have any errors? What?	
How did you solve them?	
What did you find difficult?	

Challenge 5

Write a program that asks the user their first name and then asks them their surname and then prints their whole name 3 times.

Eg:

```
What is your first name?
```

```
What is your surname?
```

```
Miss Dodd Miss Dodd Miss Dodd
```

Self review:

	Your response
Completed successfully?	
Did you have any errors? What?	
How did you solve them?	
What did you find difficult?	

Challenge 6

Write a program that uses the following variables to calculate the number of minutes in a week:

Variables:

DaysPerWeek

HoursPerDay

MinutesPerHour

Self review:

	Your response
Completed successfully?	
Did you have any errors? What?	
How did you solve them?	
What did you find difficult?	

Challenge 7

Type Casting

To cast data to an integer we use `int()`

To cast data to a string we use `str()`

Challenge:

Write a program that asks the user their name, says 'Hello' to them, using their name and then asks how old they are. The program should then calculate their age at their next birthday and respond "So your next birthday you are (age)?"

Self review:

	Your response
Completed successfully?	
Did you have any errors? What?	
How did you solve them?	
What did you find difficult?	

Challenge 8

Type Casting

To cast data to an integer we use `int()`

To cast data to a string we use `str()`

Find the area of a rectangle

Write a program that finds the area of a rectangle:

Eg:



```
Please enter width: 9
```

```
Please enter height: 5
```

```
The area is: 45
```

Self review:

	Your response
Completed successfully?	
Did you have any errors? What?	
How did you solve them?	
What did you find difficult?	

Challenge 9

Write a program that says:

This is (your name)'s first program

Put your name in where the brackets are represented. Make sure that you use the correct punctuation and an apostrophe is in the correct place.

HINT: you will need what is called an escape character in this code

Self review:

	Your response
Completed successfully?	
Did you have any errors? What?	
How did you solve them?	
What did you find difficult?	

Challenge 10

Write a program that asks the user how long, on average, they spend on a computer per day.

IF the user spends less than 2 hours per day, the program needs to say, 'That seems reasonable'
ELSE, the program needs to say, 'Get a life'

	Your response
Completed successfully?	
Did you have any errors? What?	
How did you solve them?	
What did you find difficult?	

Challenge 11

Sometimes there are more than two possible options. I could have jelly babies OR gummy bears OR fried eggs OR drumsticks.

Building on challenge 10, write a program that asks the user how long, on average, they spend on a computer per day and:

IF it is less than 2 hours says 'That seems reasonable'

ELSE IF it is less than 4 hours per day says 'Do you have time for anything else?'

ELSE, the program says, 'You need to get some fresh air once in a while, and a life'

Hint: ELSE IF becomes ELIF in Python

Self review:

	Your response
Completed successfully?	
Did you have any errors? What?	
How did you solve them?	
What did you find difficult?	

Challenge 12

Write a program that asks the user 'What is your question?'

The program should respond with 'Let me think about that' and pause for 10 seconds before responding with 'I don't want to answer that question right now'

The program should then ask the user the same question that the user entered and then laugh out loud (lol) at their response.

Self review:

	Your response
Completed successfully?	
Did you have any errors? What?	
How did you solve them?	
What did you find difficult?	

Challenge 13

Practice task:

Copy the following program:

```
import random
print (random.randint(0,100))
```

The random module lets you generate random numbers.

Write a short program that prints out a random number every 3 seconds for 30 seconds

	Your response
Completed successfully?	
Did you have any errors? What?	
How did you solve them?	
What did you find difficult?	

Challenge 14

Practice task:

Copy the code below into Python and see what it does:

```
for i in range(0,5):  
    print('looping')
```

One of the things that makes computers so useful is the speed at which they do things. This makes them useful for when we want them to do something over and over. We call this iteration or looping.

Challenge:

Write a program that counts to 3 with a 1 second pause in between the numbers and then says 'GO!'

Self review:

	Your response
Completed successfully?	
Did you have any errors? What?	
How did you solve them?	
What did you find difficult?	

Challenge 15

Practice task:

Copy this code into Python

```
count = 0
while (count < 9):
    print ('The count is:' +str(count))
    count = count + 1

print ("Good bye!")
```

Challenge:

Write a program that sets a password as 'changeme' and asks the user to enter the password and keeps asking until the correct password is entered and then says 'Accepted'. The program should count how many attempts the user has taken and tell them after they have been accepted.

Extra Challenge:

If the user takes more than 5 attempts the program should say, 'Access denied, please press enter to exit and contact security to reset your password'

Self review:

	Your response
Completed successfully?	
Did you have any errors? What?	
How did you solve them?	
What did you find difficult?	

Challenge 16

For this challenge you will need to use all of the things that you have learnt so far. You will need to import random.

Write a program where the computer thinks of a number between 1 and 100 (i.e. picks a number at random). It should then ask the user to guess what number it is thinking of. It should then say whether the number the computer is thinking of is higher or lower than the one guessed. If the user guess correctly it should say well done and say how many guesses it took them, if not it asks them to guess again.

Self review:

	Your response
Completed successfully?	
Did you have any errors? What?	
How did you solve them?	
What did you find difficult?	