Python 1 Exercises

Please note that your answer does not have to match the below answers like-for-like. As long as it generally follows the same patterns and has the same outputs, then there is no problem with that.

Part 1

Strings

1. Create a variable which will store your first name. Print out the variable.

```python
first_name = 'John'
print(first_name)
```

2. Create a second variable which will store your last name. Concatenate the two variables and print out the result.

   There are two ways of solving this:

```python
first_name = 'John'
last_name = ' Smith'
print(first_name + last_name)
```

```python
first_name = 'John'
last_name 'Smith'
print(f'{first_name} {last_name})
```

3. Extend the above to print the following using an `f-string` : `Hi, my name is {first_name} {last_name}` .

```python
first_name = 'John'
last_name 'Smith'
print(f'Hi, my name is {first_name} {last_name})
```

Integers

1. Create two variables that store integer values. Calculate the product of the two integers and store it in a third variable. Print the value of this variable.

```python
x = 10
y = 20
result = x * y
print(result)
```

2. Extend the above to print out the following: `The product of {x} and {y} is {product}` , replacing `x, y, product` with the values for the above.

```
x = 10
y = 20
result = x * y
print(f'The product of {x} and {y} is {result}')
```

Lists

```
people = ["John", "Sally", "Mark", "Lisa", "Joe", "Barry", "Jane"]
```

1. Retrieve the third element, `Mark` (the second-indexed element) and store it in its own variable. Print the variable.

```
third_person = people[2]
print(third_person)
```

2. Retrieve the element third from the back, `Joe`, and store it in its own variable. Print the variable.

```
third_to_last_person = people[-3]
print(third_to_last_person)
```

3. Split the list into a new list with just the names `Mark`, `Lisa`, `Joe` and `Barry`.

```
sub_list = people[2:6]
print(sub_list)
```

4. Compare the first and last element in the list, and print out the result of comparing them.

```
print(people[0] == people[-1])
```

Input

1. Accept input from the user by asking for their name. Print their name out.

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

2. Accept two integers inputs from the user and calculate the product. Print out the product.

```
num1 = int(input('First number: '))
num2 = int(input('Second number: '))
product = num1 * num2
print(product)
```

3. Accept two integer inputs from the user. Use the comparison operator to print out if the two values are equal (`True`), or if they're not (`False`).

```python
num1 = int(input('First number: '))
num2 = int(input('Second number: '))
print(num1 == num2)
```

Part 2

1. Accept an integer input from the user. If the number is even, print out an appropriate message, and vice versa if it even odd.

```python
num = int(input('Please input a number: '))
mod = num % 2

if mod > 0:
    print('You picked an odd number')
else:
    print('You picked an even number')
```

2. Extend the above to print a different message if the number is a multiple of four.

```python
num = int(input('Please input a number: '))

if num % 4 == 0:
    print('You picked a multiple of 4')
elif num % 2 == 0:
    print('You picked an even number')
else:
    print('You picked an odd number')
```

3. Accept an integer input from the user. If the number is a multiple of three, print the word `fizz`. If the number is a multiple of five, print `buzz`. If it is neither of these, do nothing.

```python
num = int(input('Please input a number: '))

if num % 5 == 0:
    print('buzz')
elif num % 3 == 0:
    print('fizz')
```

4. Write a program that will convert celsius to fahrenheit, and vice versa. Accept two inputs from the user. The first will be a letter which is either `c`, which means you should convert from fahrenheit to celsius, or `f` which is vice versa. For the second input, accept an integer value representing the temperature. Print out the converted value, along with the correct temperature type.

```python
temperature_type = input('Which temperature scale would you like to convert
to? ')
temperature_value = int(input('Input your temperature: '))
```

```python
if temperature_type == 'c':
    converted_temp = (temperature_value - 32) * (5 / 9)
    print(f'{temperature_value}f is {converted_temp}c')

elif temperature_type == 'f':
    converted_temp = (temperature_value * 1.8) + 32
    print(f'{temperature_value}c is {converted_temp}f')
else:
    print('Temperature scale was neither c or f.')
```

Part 3

1. In your own words, describe each of the following logical operators: `and`, `or` and `not`.

> `OR` dictates that as long as at least one condition is true, the whole expression is true. If at least one of a or b is true, then the whole expression is true. If both are false, then the whole expression is false. `AND` dictates that all conditions of an expression must be true, for the whole expression to be true. If a AND b are both true, then the whole expression is true. If either a or b, or both, are false, then whole expression is false. `NOT` dictates that any value or condition will be inverted. True becomes false, false becomes true.

2. Consider the below code. Write down what you think the expected output will be.

   Expected output:

   > *False True True True*

3. Consider the below code. Write down what you think the expected output will be.

   Expected output:

   > *False False False True*

4. Without referring back to the slides, write down the truth table for each of the three logical operators.

   AND:

a	b	AND
T	T	T
T	F	F
F	T	F
F	F	F

   OR:

a	b	OR
T	T	T
T	F	T

F	T	T
F	F	F

NOT:

a	NOT
T	F
F	T

5. Create a program for the following specification...

```python
age = int(input('Please enter your age: '))
salary = int(input('Please enter your salary: '))

if age >= 21 and salary >= 21000:
    print('We can offer a loan of up to £50,000')
elif age >= 30 and salary >= 30000:
    print('We can offer a loan of up to £75,000')
elif age >= 30 and salary >= 50000:
    print('We can offer a loan of up to £100,000')
else:
    print('Sorry, we cannot offer you a loan')
```