Tutorial 1 (Week 1 + 2)

OBJECTIVES

- Able to use print function for output
- Able to use string addition/concatenation
- Able to use string format
- Able to translate number into string
- Able to use escape sequences
- Able to use if-else statement
- Able to use for loop statement
- Able to use while loop statement

# String format, input output

Given the following code:

```
product_code = "377B"
product_name = "Beef Liquid Stock"
product_size = "250mL"
product_price = 2.15
```

SECTION 1 – Run and understand

1) What is the output of the following statement?

```
print("product_code + product_name + product_size")
```

Copy the python code, run it, and check your answer.

2) What is the output of the following statement?

```
print(product_code + " product_name " + product_size)
```

Copy the python code, run it, and check your answer.

3) What is the output of the following statement?

```
print(product_code + ", " + product_name + ", + product_size")
```

Copy the python code, run it, and check your answer.

4) What is the output of the following statement?

```
print(product_code + ", " + product_name + ", " + product_size)
```

Copy the python code, run it, and check your answer.

SECTION 2 Exercises – string format

5) Write one print statement using the above variables and string addition so that it produces the following exact output:

```
377B: Beef Liquid Stock, 250mL
```

6) Write one print statement using the above variables and string addition so that it produces the following exact output:

```
"Beef Liquid Stock", 250mL
```

7) Write one print statement using the above variables and string addition so that it produces the following exact output:

```
Beef Liquid Stock, 250mL $2.15
```

8) Write one print statement using the above variables and string format so that it produces the following exact output:

```
377B: Beef Liquid Stock, 250mL
```

9) Write one print statement using the above variables and string format so that it produces the following exact output:

```
"Beef Liquid Stock", 250mL
```

10) Write one print statement using the above variables and string format so that it produces the following exact output:

```
Beef Liquid Stock, 250mL, $2.15
```

11) Using string format to write a program that produces the following output

```
President           Secret Service Code Name       In Office
Donald Trump                 "Mogul"               2017-present
Barack Obama                "Renegade"             2009-2017
George W. Bush              "Tumbler"              2001-2009
Bill Clinton                 "Eagle"               1993-2001
```

12) Using string format and escape sequence to write a program that produces the following output

```
Alkali metals:

Element        Symbol          Atomic number        Atomic weight
Lithium        Li                     3                     6.940
Sodium         Na                    11                    22.990
Potassium      K                     19                    39.098
```

| | | | |
|---|---|---|---|
| Rubidium | Rb | 37 | 85.468 |
| Caesium | Cs | 55 | 132.905 |
| Francium | Fr | 87 | 223.000 |

13) Using string format to write a program that produces the following output

```
 1 x  1 =   1
 2 x  2 =   4
 3 x  3 =   9
 4 x  4 =  16
 5 x  5 =  25
 6 x  6 =  36
 7 x  7 =  49
 8 x  8 =  64
 9 x  9 =  81
10 x 10 = 100
```

# IF-ELSE STATEMENT

**1.** Write a program to calculate the cost based on the following pricing.

| **Number of items** | **Cost** |
|---|---|
| 1-50 | $3 per item<br>Postage: $10 |
| More than 50 | $2 per item<br>Postage: free |

The program should display a receipt as in the following examples:

**Example 1:**

```
Enter the number of items: 10

Receipt:
10 items x $3 = $30
Postage: $10
Total: $40
```

**Example 2:**

```
Enter the number of items: 100

Receipt:
100 items x $2 = $200
Postage: $0
Total: $200
```

**2.** Write a program to calculate the cost based on the following pricing.

| **Number of items** | **Cost** |
|---|---|
| 1-50 | $3 per item<br>Postage:<br>Standard post: $10<br>Registered post: $15<br>Express post: $20 |
| More than 50 | $2 per item<br>Postage:<br>Standard post: free<br>Registered post: $10<br>Express post: $17 |

The program should display a receipt as in the following examples:
**Example 1:**

```
Enter the number of items: 10
Enter shipping method (s/r/e): r

Receipt:
10 items x $3 = $30
Registered post: $15
Total: $45
```

**Example 2:**

```
Enter the number of items: 100
Enter shipping method (s/r/e): s

Receipt:
100 items x $2 = $200
Standard post: $0
Total: $200
```

**3.** Write a program to ask the user to enter four integers and then display the minimum and maximum number.

The program should work as in the following examples:

```
Enter the first integer: 10
Enter the second integer: 2
Enter the third integer: 15
Enter the fourth integer: 9

The minimum number is 2 and the maximum number is 15.
```

Here is another example:

```
Enter the first integer: 5
Enter the second integer: 5
Enter the third integer: 5
Enter the fourth integer: 5

The minimum number is 5 and the maximum number is 5.
```

## FOR LOOP

**1.** Write a program to display equations using `for` loop statement and string format

```
 1 +  1 =  2
 2 +  2 =  4
 3 +  3 =  6
 4 +  4 =  8
 5 +  5 = 10
 6 +  6 = 12
 7 +  7 = 14
 8 +  8 = 16
 9 +  9 = 18
10 + 10 = 20
```

**2.** Write a program to display the following sequence of numbers using `for` loop statement.

```
1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10.
```

```
1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : 9 : 10
```

**3.** Write a program to display the following sequence of numbers using `for` loop statement.

```
12, 14, 16, 18, 20.
```

```
1.2 * 1.4 * 1.6 * 1.8 * 2.0.
```

```
1; 3; 5; 7; 9.
```

**4.** Write a program to display the following sequence of numbers using `for` loop statement.

```
0
02
024
0246
02468
0246810
024681012
02468101214
0246810121416
024681012141618
02468101214161820
```

## WHILE LOOP

**1.** Write a program to display equations using `while` loop statement and string format

```
 2 +  2 =  4
 4 +  4 =  8
 6 +  6 = 12
 8 +  8 = 16
10 + 10 = 20
```

**2.** Write a program to display the following sequence of numbers using `while` loop statement.

```
1.1 : 2.2 : 3.3 : 4.4 : 5.5 : 6.6 : 7.7 : 8.8 : 9.9 : 11.0
```

```
10 * 8 * 7 * 6 * 5.
```

```
1; 3; 5; 7; 9.
```

**3.** Write a program that uses the **`while` loop,** asks the user to enter integer numbers and then displays the summary information. The user has to enter q to quit the program. The program should work as follows:

```
Enter an integer or q to quit: 5
Enter an integer or q to quit: 10
Enter an integer or q to quit: -1
Enter an integer or q to quit: 3
Enter an integer or q to quit: 0
Enter an integer or q to quit: -5
Enter an integer or q to quit: q


Summary information:
You have entered 6 integers. The sum of these numbers is 12.
There are 2 even numbers.
There are 4 odd numbers. There are 3 positive numbers. There
are 2 negative numbers.
```