

## Tutorial 1 (Week 1 + 2)

### OBJECTIVES

- Able to use print function
- Able to use string concatenation
- Able to create and manipulate variables of basic data types
- Able to use if-else statements

### SECTION 1 – Number data type

Given the following code:

```
radius = 3
pi = 3.142
length = 4
breadth = 2.5
```

- 1) Write a program to compute the circumference of a circle using the radius and pi variables given above. Store the circumference as a variable.
- 2) Write a program to compute the area of a circle using the radius and pi variables given above. Store the area as a variable.
- 3) Write a program to compute the perimeter of a rectangle using the length and breadth variables given above. Store the perimeter as a variable.
- 4) Write a program to compute the area of a rectangle using the length and breadth variables given above. Store the area as a variable.
- 5) Write a program that computes and prints the result of  $\frac{512 - 2^5}{231 + 10}$
- 6) Ask the user to enter a number x. Use the sep optional argument to print out x, 2x, 3x, 4x, and 5x, each separated by three dashes, like below.  
Enter an integer: 4  
4---8---12---16---20
- 7) Compute the following in the python interpreter and take note of the data type of the final result.
  - a. Sum of 3 and 2
  - b. Sum of 1 and 1.0
  - c. Divide 17 by 3
  - d. Subtract 5 from 8
  - e. Multiply 5 and 6
  - f. Square of 16
  - g. 2 to the power of 3
  - h. Square-root of 16
  - i. Get the remainder of 34 divided by 6.
  - j. Compute 18 / 5
  - k. Compute 18 // 5

## SECTION 2 – String : f-string format, print()

Given the following code:

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

Run and understand

What is the output of the following statement? Copy the python code, run it, and check your answer.

```
8) print("product_code + product_name + product_size")  
9) print(product_code + " product_name " + product_size)  
10) print(product_code + ", " + product_name + ", " + product_size)  
11) print(product_code + ", " + product_name + ", " + product_size)  
12) print(product_code*3 + product_name)  
13) print(product_price*3 + product_name)
```

## SECTION 3 – String : Exercises – string format

- 14) Write one print statement using the above variables and string addition so that it produces the following exact output:  
377B: Beef Liquid Stock, 250mL
- 15) Write one print statement using the above variables and string addition so that it produces the following exact output:  
"Beef Liquid Stock", 250mL
- 16) 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
- 17) Write one print statement using the above variables and string format so that it produces the following exact output:  
377B: Beef Liquid Stock, 250mL
- 18) Write one print statement using the above variables and string format so that it produces the following exact output:  
"Beef Liquid Stock", 250mL
- 19) 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

- 20) Using string format to write a program that produces the following output. 14 characters in the first column, 30 characters in the second column.

President	Secret Service Code Name	In Office
Joe Biden	"Celtic"	2021-
Donald Trump	"Mogul"	2017-2020
Barack Obama	"Renegade"	2009-2017
George W. Bush	"Tumbler"	2001-2009
Bill Clinton	"Eagle"	1993-2001

- 21) Using string format and escape sequence to write a program that produces the following output – 14 characters, 8 characters, 16 characters 14 characters for the respective columns.

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	230.000

#### SECTION 4 – Variables

- 22) Which of the following variable names are legal Python variable names? If they are not, why?
- a. var
  - b. var1
  - c. 1var
  - d. new-var
  - e. new var
  - f. VAR
  - g. and
  - h. \_and

## SECTION 5 – Booleans

Given the following code:

```
W = False
X = True
Y = False
Z = True
```

23) What are the following results?

- a. X and Y
- b. X and Z
- c. W and Y
- d. W or X
- e. W or Y
- f. X or Z
- g. Y or Z
- h. not W and X
- i. not X and Z
- j. X and Z or W
- k. X and Y or Z
- l. (X and Z) or W
- m. not (W or Y) and Z

## SECTION 6 – If Else

24) Write a program to calculate the cost based on the following pricing.

Number of items	Cost
1-50	\$3 per item Postage: \$10
More than 50	\$2 per item 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

25) Write a program to calculate the cost based on the following pricing.

Number of items	Cost
1-50	\$3 per item Postage: Standard post: \$10 Registered post: \$15 Express post: \$20
More than 50	\$2 per item Postage: Standard post: free Registered post: \$10 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
```

26) 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.
```