**Hong Kong Institute of Vocational Education**

**FS113002N Diploma of Foundation Studies – Information Technology**

**ITE3711 Programming Concept and Applications**

**Topic 1**

**Lab 1.2 – Variables**

Exercise 1

Identify whether the followings are valid or invalid variable name.

Put a **tick** ✓if the variable name is valid and a **cross** ✗if the variable name is invalid.

**Example:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Variable name** | **Valid / Invalid** | **Reason(s) of invalid variable name** |
|  | num1 | ✓ |  |
|  | 1num | ✗ | 1 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Variable name** | **Valid / Invalid** | **Reason(s) of invalid variable name** |
| (a) | num! | X | ! |
| (b) | num 1 | X | Cannot use Space(\_) |
| (c) | \_num1 | V |  |
| (d) | Num1 | V |  |
| (e) | num2 | V |  |
| (f) | True | X | Reserves Word |
| (g) | False | X | Reserves Word |
| (h) | n | V |  |
| (i) | 5students | X | 5 |
| (j) | giveMe5 | V |  |
| (k) | "num3" | X | “”” |
| (l) | and | X | Reserves Word |

Exercise 2

Identify the data type of the following variables.

**Example:**

|  |  |  |
| --- | --- | --- |
|  | **Variable & value** | **Data type** |
|  | studentName = "Chan Tai Man" | String |
|  | studentNumber = 230000000 | Integer |
|  | studentMarks = 75.5 | Float |

|  |  |  |
| --- | --- | --- |
|  | **Variable & value** | **Data type** |
| (a) | location = "Sha Tin" | String |
| (b) | marks = "95" | String |
| (c) | phoneNumber = 12345678 | Integer |
| (d) | GPA = 3.69 | Float |
| (e) | price = "HKD 14.5" | String |
| (f) | date = 20230831 | Integer |
| (g) | progress = 100.0 | Float |
| (h) | num1 = -5 | integer |
| (i) | height = 193 | Integer |
| (j) | weight = 67.1 | float |

Exercise 3

Given the variable name and value, write down the variable declaration statement.

**Example:**

|  |  |  |
| --- | --- | --- |
| **Variable name** | **Value** | **Declaration statement** |
| phoneModel | "X" | phoneModel = "X" |
| phonePrice | 8999.9 | phonePrice = 8999.9 |
| phoneMemory | 128 | phoneMemory = 128 |

|  |  |  |
| --- | --- | --- |
| **Variable name** | **Value** | **Declaration statement** |
| foodID | "FID3" | foodID = “FID3” |
| fruit | "Banana" | Fruit = “Banana” |
| birthday | 19970531 | Birthday = 19970531 |
| gender | "M" | Gender = “M” |
| bmi | 19.1 | Bmi = 19.1 |
| tdee | 2535 | Tdee = 2535 |
| time | 0830 | Time = 830 |
| time | "0930" | Time = “0930” |
| membership | 0 | Membership=0 |
| followers | 993 | Followers=993 |

Exercise 4

Write down the output of the program fragments below.

**Example:**

|  |  |  |
| --- | --- | --- |
|  | **Program fragments** | **Output** |
|  | print(5) | 5 |
|  | price = 5.5  print(price) | 5.5 |

|  |  |  |
| --- | --- | --- |
|  | **Program fragments** | **Output** |
| (a) | price = 5.5  drink = "coke"  volume = 350  print(drink) | Coke |
| (b) | price = 5.5  drink = "coke"  volume = 350  print(drink)  print(volume) | Coke  350 |
| (c) | price = 5.5  drink = "coke"  volume = 350  drink = "tea"  print(drink) | Tea |
| (d) | price = 5.5  drink = "coke"  volume = 350  print(drink)  drink = "tea"  print(drink) | Coke  tea |

Exercise 4 (cont’)

Write down the output of the program fragments below.

|  |  |  |
| --- | --- | --- |
|  | **Program fragments** | **Output** |
| (e) | price = 5.5  drink = "coke"  volume = 350  print(volume)  print(float(volume)) | 350  350.0 |
| (f) | price = 5.5  drink = "coke"  volume = 350  print(price)  print(int(price)) | 5.5  5 |
| (g) | price = 5.5  drink = "coke"  volume = 350  price = 5.5 + 3  print(price + 3)  print(price) |  |
| (h) | price = 5.5  drink = "coke"  volume = 350  print(price + volume) |  |
| (i) | price = 5.5  drink = "coke"  volume = 350  print(str(price) + drink) |  |
| (j) | price = 5.5  drink = "coke"  volume = 350  print(str(price) + str(3) + drink) |  |

Exercise 5

Write down the output of the program fragments below.

**Example:**

|  |  |  |
| --- | --- | --- |
|  | **Program fragments** | **Output** |
|  | msg1 = "IT"  msg2 = "IVE"  print(msg1 + msg2) | ITIVE |
|  | num1 = 8  num2 = 32  print(num1 + num2) | 40 |

|  |  |  |
| --- | --- | --- |
|  | **Program fragments** | **Output** |
| (a) | msg1 = "IT"  msg2 = "IVE"  print(msg1 + "/" + msg2)  print(msg2 + " - " + msg1) | “IT/IVE”  “IVE – IT” |
| (b) | num1 = 8  num2 = 32  print(num1 + num2 + 5)  print(str(num1) + str(5))  print(str(num1) + str(num2)) |  |
| (c) | msg1 = "IT"  num1 = 8  print(msg1 + str(num1))  print(str(num1 + 2)) |  |

Exercise 6

Complete the following Python program to get the expected output.

|  |  |  |
| --- | --- | --- |
|  | **Program fragments** | **Expected output** |
| (a) | msg1 = "Today"  msg2 = " is a good day!"  # Write the print() function below | Today is a good day! |
| **Answer:** | |

|  |  |  |
| --- | --- | --- |
| (b) | msg1 = "Today"  msg2 = "is"  msg3 = "a good day!"  # Write the print() function below | Today is a good day! |
| **Answer:** | |

|  |  |  |
| --- | --- | --- |
| (c) | num1 = 8  num2 = 8  # Write the print() function below | 16 |
| **Answer:** | |

|  |  |  |
| --- | --- | --- |
| (d) | num1 = 8  num2 = 8  # Write the print() function below | 64  8 |
| **Answer:** | |

Exercise 6 (cont’)

Complete the following Python program to get the expected output.

|  |  |  |
| --- | --- | --- |
|  | **Program fragments** | **Expected output** |
| (e) | msg1 = "8"  num1 = 8  # Write the print() function below | 88 |
| **Answer:** | |

|  |  |  |
| --- | --- | --- |
| (f) | msg1 = "I go"  msg2 = "by bus"  msg3 = "school"  msg4 = "Year"  msg5 = "student"  num1 = 2  num2 = 1  # Write the print() function below | I go 2 school by bus  Year1 student. |
| **Answer:** | |

|  |  |  |
| --- | --- | --- |
| (g) | msg1 = "I am studying "  msg2 = "\"Python\""  msg3 = "\tPython"  # Write the print() function below | I am studying "Python"  Python |
| **Answer:** | |