Your Name: _____   Group number: _____

MA1008 Introduction to Computational Thinking
Quiz 2, Week 9, Semester 1.   Answer all the questions in the spaces provided.
Time allowed: 1 hour

1. What are printed in the two programs below: (10 marks)

    (i)
```
def add_one(p):
    p = p + 1
    print(p)

q = 10
add_one(q)
print(q)
```

    (ii)
```
def add_one(p):
    p[0] = p[0] + 1
    print(p)

q = [10]
add_one(q)
print(q)
```

2. What is the value of L upon the execution of the following program if the input string is "abcdé"?
    (Note: In Python, the statement a, b = b, a swaps the values of a and b.)   (10 marks)

```
s = input("Enter a string: ")
L = list(s)
for i in range(0, len(s)//2):
    L[i], L[-i-1] = L[-i-1], L[i]
```

3. The code below concatenates two elements of the list L and prints one element of the resulting list.
    But it contains an error. Identify and explain the error, provide the correction, and then state what
    is printed by the print statement at the end, based on your correction.   (10 marks)

```
L = [1, 2, ["3", 4]]

L1 = L[1] + L[2]

print(L1[-2])
```

4. What is the value of S upon execution of the code below: (10 marks)
```
L = [(-1, -2, -3, -4), (1, 2, 3), (3, 4)]
S = 0
for i in L[0]:
    for j in L[2]:
        S += i*j
```

5. Python variables can either be mutable or immutable as well as iterable or non-iterable. Given the assignment statements below, place the variables on the left correctly in the table. (10 marks)

```
a = 125
b = "Python quiz"
c = [19, "Oct", 2019]
d = 6, 12, 18
e = {1:"Mon", 2:"Tue", 3:"Wed", 4:"Thu", 5:"Fri", 6:"Sat", 7:"Sun"}
```

	Iterable	Non-iterable
Mutable		
Immutable		

6. Given the function

```
def one_item (List, item = -1):
    return List[item]
```

What do the following lines of code print? (10 marks)

```
theList = ["first", 2, 6.28, True, (2, 4, 6)]

print(one_item(theList)) _____

print(one_item(theList, 0)) _____

print(one_item("235", 3)) _____
```

7. The function below doubles odd numbers and returns the result while leaving even numbers unchanged. But it has a logical problem. Identify what it is and provide a fix. (10 marks)

```
def double_odd(num):        _____
    if num%2 != 0:
        num = num*2         _____
        return num
```
_____

_____

8. In the code below, what is printed? (10 marks)

```
S = [10, 9, 8, 7, ("A", "B"), "C", "D"]
A = S.pop()
B = S.pop(-2)

print(S, B, "B") _____
```

9. The following program is to print a message using the function `print_message`, with the value printed to two decimal places. But it contains errors. Circle the errors, and write down the correction. Then write down what is actually printed based on your correction, and indicate the spaces in the output with squares.   (7 marks for the corrections, 3 marks for the output)

```
def print_message(value, message)
   print("{1} is {8.2d}"format(message, value)

temp = 78.9645
print_message("Temperature = ", temp)
```

_____

_____

_____

_____

_____

10. A dictionary called `revenue` is used to record the daily incomes from different shops of a chain, with the location of the shop as the key and the daily income as the value. If the record contains three shops so far, the dictionary may look like this:
    ```
    revenue = {"Jurong":1620.55, "Bedok":2598.60, "Sengkang":1886.40}
    ```

    A function `add_income` has three parameters, the dictionary (`revenue`), a particular shop (`shop`) and a float (`income`) for recording the daily revenue. The function adds the new income to the given shop if the shop already exists in the dictionary, otherwise a new key-value pair is created, with `shop` as the key and `income` as the value. This is performed in the Python code below. Fill in the blanks to complete the function.   (10 marks)

```
def add_income(revenue, shop, income):

   if _____ in _____:

      _____ += income

   else:

      _____ = _____
```