COMP8270
Programming for Artificial Intelligence

Class 2

The aim of this class is practice the use of data structures and loops in Python. To start, create a new Jupyter Notebook – you could name it 'Class 2'. Each task provides a sample input values, but your solution must work with any input values.

Note: The exercise marked with a * is part of Assessment 1 – you should show your solution to your class supervisor by the end of Class 3 on Week 16.

1. Write a Python code that creates a list of numbers between 1 and 100 that are divisible by 2 and 5. Remember to use the `range()` function and the module division (`%`).

```
divisible = []

# write your logic here

print(divisible)  # this line will print the list
```

2. Given the following list of strings, write a Python code to create a list that includes names that start with a specific letter (e.g., letter 'H').

```
names = ["Jim", "Hetty", "Kirsten", "Theo", "Henry", "Paul"]
letter = "K"
filtered = []

# write your logic here

print(filtered)  # this line will print the list
```

3. * Write a Python code that, given a list of names, creates a dictionary where each name is grouped by the first letter. Your code should work for any list of names – e.g.:

```
names = ["Jim", "Hetty", "Kirsten", "Theo", "Henry", "Paul"]
grouped = {}

"""
dictionary grouping names based on the first letter

"H" → "Henry", "Hetty"
"J" → "Jim"
"K" → "Kirsten"
"P" → "Paul"
"T" → "Theo"

"""

print(grouped)
```

4. Given 2 lists of numbers, write a Python code that returns the sum of the values that occur is both lists:

```
values1 = [4, 6, 2, 9, 10, 11, 24, 50, 33]
values2 = [3, 5, 24, 12, 13, 4, 20, 10, 6]
total = 0

# write your logic here

print(total)
```

5. Given a dictionary, write a Python code that create a new dictionary where the keys are used as values and the values are used as keys – e.g.: "computer" → "apple" becomes "apple" → "computer" in the new dictionary. Your solution must work with any dictionary.

```
my_dict = {"computer" : "apple", "model" : "macbook pro", "processor" : "M1
Pro", "year" : 2021}
inverted_dict = {}

# write logic here

print(inverted_dict)
```

6. Write a Python code that returns the sum of the indexes of the values of a list that are greater than 10.

```
values_list = [4, 12, 2, 9, 10, 11, 5, 9, 33]
total = 0

# write your logic here

print(total)
```