

prac01

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CP2410 Practical 01 SP51 2023

Student Name: Sihan Chen

jcu ID: 14187662

Q1

```
[1]: def is_multiple(n, m):  
      if n % m == 0:  
          return True  
      return False
```

Test output for Q1

```
[2]: # is multiplier  
n1 = 36  
m1 = 12  
print(is_multiple(n1, m1))  
# is not multiplier  
n1 = 11  
m1 = 12  
print(is_multiple(n1, m1))
```

True

False

Q2

```
[3]: output = [2**i for i in range(9)]  
print(output)
```

[1, 2, 4, 8, 16, 32, 64, 128, 256]

Q3

```
[4]: def are_different(n):  
      return len(n) == len(set(n))
```

Test output for Q3

```
[5]: # no duplicates
nums_1 = [1, 12, 2, 3, 4]
print('nums_1 are all different: ' + str(are_different(nums_1)))
# has duplicates
nums_2 = [1, 12, 2, 3, 4, 2]
print('nums_2 are all different: ' + str(are_different(nums_2)))
# empty list
nums_3 = []
print('nums_3 are all different: ' + str(are_different(nums_3)))
```

```
nums_1 are all different: True
nums_2 are all different: False
nums_3 are all different: True
```

Q4

```
[6]: def harmonic_gen(n):
      h = 0
      for i in range(1, n+1):
          h += 1/i
          yield h
```

Test output for Q4

```
[7]: harmonic_numbers = harmonic_gen(8)
      for i in range(1, 9):
          print(f"{i}: {next(harmonic_numbers)}")
```

```
1: 1.0
2: 1.5
3: 1.8333333333333333
4: 2.0833333333333333
5: 2.2833333333333333
6: 2.4499999999999997
7: 2.5928571428571425
8: 2.7178571428571425
```