

IST 1025: INTRODUCTION TO PROGRAMMING  
END-SEMESTER EXAM  
12<sup>th</sup> August 2021, 9:00 – 11:00 (2 hours)

**Instructions****Total Marks: 30**

1. Answer Question One on Blackboard.
  2. Answer Questions Two and Three in this document and submit in **PDF**.
  3. Paste screenshots of your programs and output in the spaces indicated.
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**Question One [14 Marks]**

This question will be done as a test on Blackboard.

**Question Two [8 Marks]**

Consider the following program.

```

1  import pi
2
3  def main:
4      radius = input(float("Enter the radius: "))
5      area = math.pi * radius ** 2
6      print("The area is", area, "square units")
7
8  if __name__ == "main":
9      main()

```

- a) Identify the line number where there are errors and write down the correction. [4 Marks]

**Line 1:** import pi **Correction:** from math import math

**Line 4:** input(float("Enter the radius")). **Correction:** float(input("Enter the radius"))

**Line 3:** def main **Correction:** def main ()

**Line 8:** if \_\_name\_\_ == "main" **Correction:** if \_\_name\_\_ == "\_\_main\_\_"

- a) Explain the purpose of lines 8 and 9. [2 Marks]

Is used to execute some code only if the file was run directly, and not imported

- b) Write down a modified line 6 so that it uses an f-string and rounds the output to two decimal places. [2 Marks]

print( "The area is", f{area: .2f}', "square units")

**Question Three [8 Marks]**

- a) Using the lists **mark\_ranges** = ['90-100', '80-89', '70-79', '60-69', '0-59'] and **grades** = ['A', 'B', 'C', 'D', 'F'], write a program that uses a **for loop** to create a dictionary where

each key comes from the **mark\_ranges** list and its value comes from the same position in the **grades** list. Your dictionary might start out like this: `{'90-100': 'A', ...}`. [4 Marks]

- b) Add code to your program for part (a) to print out the contents of the dictionary so that the output looks like this: [4 Marks]

MARK	GRADE
90-100	A
80-89	B
70-79	C
60-69	D
0-59	F

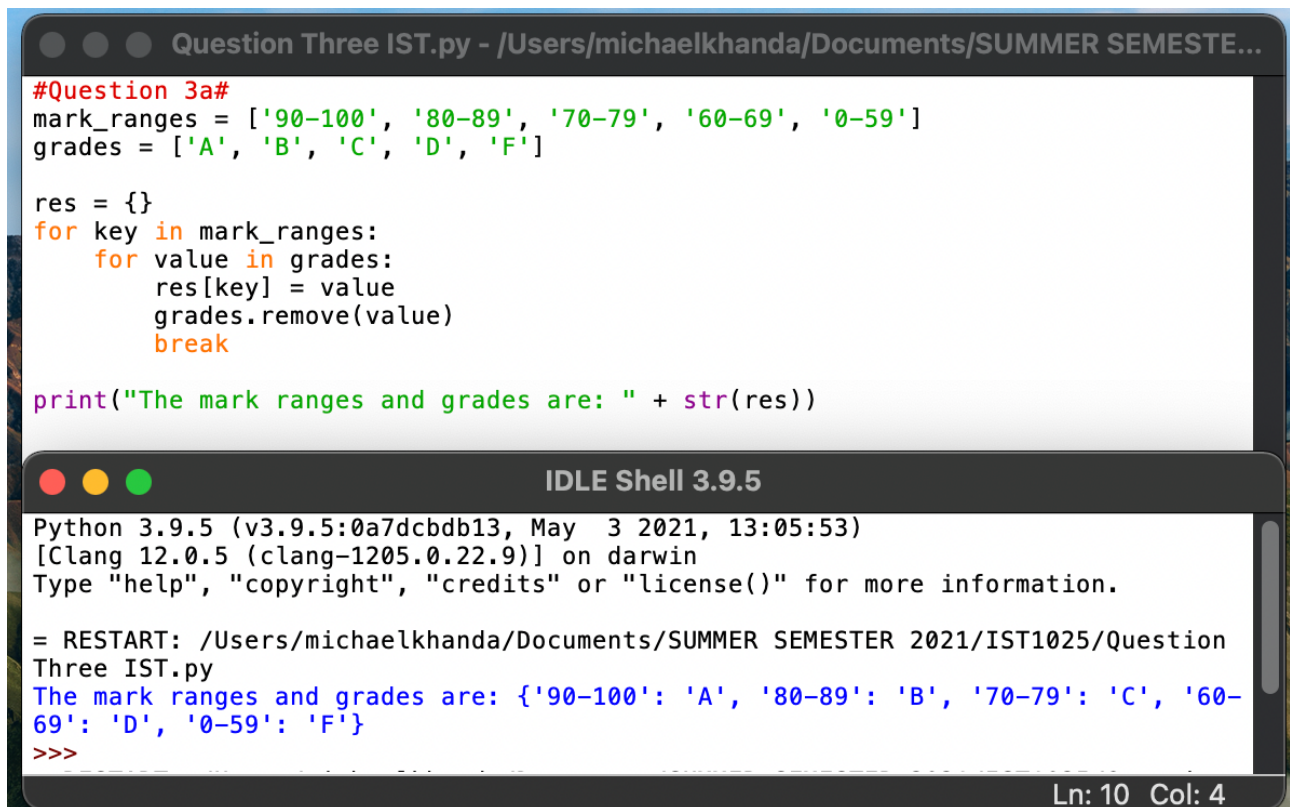
```
*Question Three IST.py - /Users/michaelkhanda/Documents/SUMMER SEMEST...  
#Question 3b#  
mark_ranges = ['90-100', '80-89', '70-79', '60-69', '0-59']  
grades = ['A', 'B', 'C', 'D', 'F']  
  
res = {}  
for key in mark_ranges:  
    for value in grades:  
        res[key] = value  
        grades.remove(value)  
        break  
  
print("The mark ranges and grades are: " + str(res))  
print("The mark_ranges and grades are: " + str(res))  
  
mark_ranges = ('90-100', '80-89', '70-79', '60-69', '0-59')  
grades = ('A', 'B', 'C', 'D', 'F')  
x = 0  
while x<=4:  
    print(grades[x], mark_ranges[x])  
    x = x+1
```

Ln: 1 Col: 12

IDLE Shell 3.9.5

```
D 60-69  
F 0-59  
>>>  
= RESTART: /Users/michaelkhanda/Documents/SUMMER SEMESTER 2021/IST1025/Question  
Three IST.py  
The mark ranges and grades are: {'90-100': 'A', '80-89': 'B', '70-79': 'C', '60-  
69': 'D', '0-59': 'F'}  
The mark_ranges and grades are: {'90-100': 'A', '80-89': 'B', '70-79': 'C', '60-  
69': 'D', '0-59': 'F'}  
A 90-100  
B 80-89  
C 70-79  
D 60-69  
F 0-59  
>>>
```

Ln: 11 Col: 0



The image shows a screenshot of a Python IDE window. The top pane displays a Python script for 'Question 3a#'. The script defines two lists: 'mark\_ranges' with values ['90-100', '80-89', '70-79', '60-69', '0-59'] and 'grades' with values ['A', 'B', 'C', 'D', 'F']. It then creates an empty dictionary 'res'. A nested loop iterates over 'mark\_ranges' and 'grades', assigning each grade to its corresponding mark range in 'res' and removing the grade from the 'grades' list. Finally, it prints the resulting dictionary. The bottom pane, titled 'IDLE Shell 3.9.5', shows the execution output, which matches the script's logic and output.

```
#Question 3a#
mark_ranges = ['90-100', '80-89', '70-79', '60-69', '0-59']
grades = ['A', 'B', 'C', 'D', 'F']

res = {}
for key in mark_ranges:
    for value in grades:
        res[key] = value
        grades.remove(value)
        break

print("The mark ranges and grades are: " + str(res))
```

Python 3.9.5 (v3.9.5:0a7dcdbd13, May 3 2021, 13:05:53)  
[Clang 12.0.5 (clang-1205.0.22.9)] on darwin  
Type "help", "copyright", "credits" or "license()" for more information.

= RESTART: /Users/michaelkhanda/Documents/SUMMER SEMESTER 2021/IST1025/Question Three IST.py  
The mark ranges and grades are: {'90-100': 'A', '80-89': 'B', '70-79': 'C', '60-69': 'D', '0-59': 'F'}  
>>>

Ln: 10 Col: 4