

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.
- 

**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")

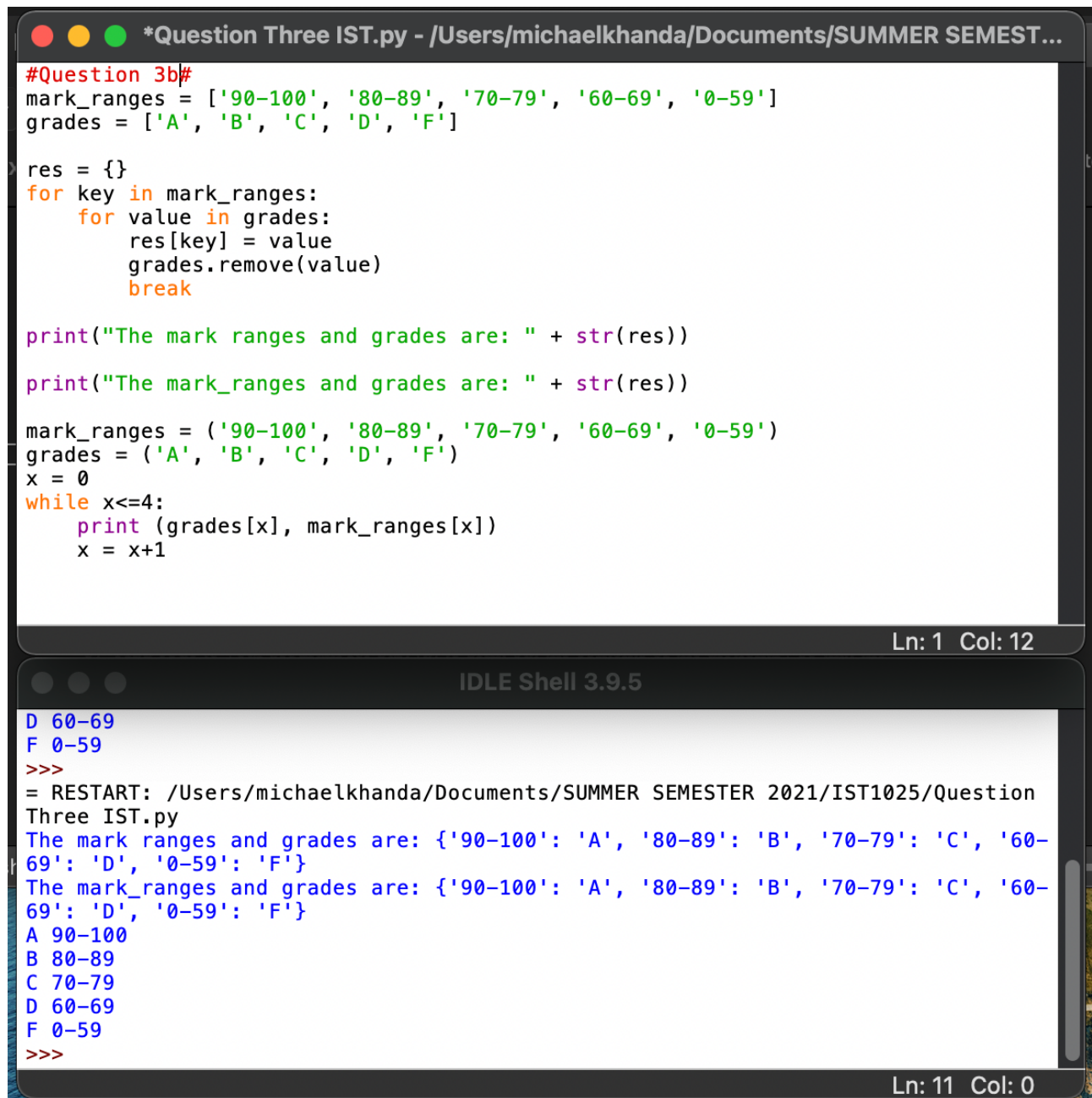
**Question Three [8 Marks]**

- 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



The image shows a screenshot of a Python script editor and its execution output. The script, titled `*Question Three IST.py`, defines two lists: `mark_ranges` and `grades`. It then creates a dictionary `res` by iterating over `mark_ranges` and `grades`, assigning each grade to its corresponding mark range and removing it from the `grades` list. The script prints the resulting dictionary twice. Finally, it uses a `while` loop to print each grade and its corresponding mark range in a specific format.

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

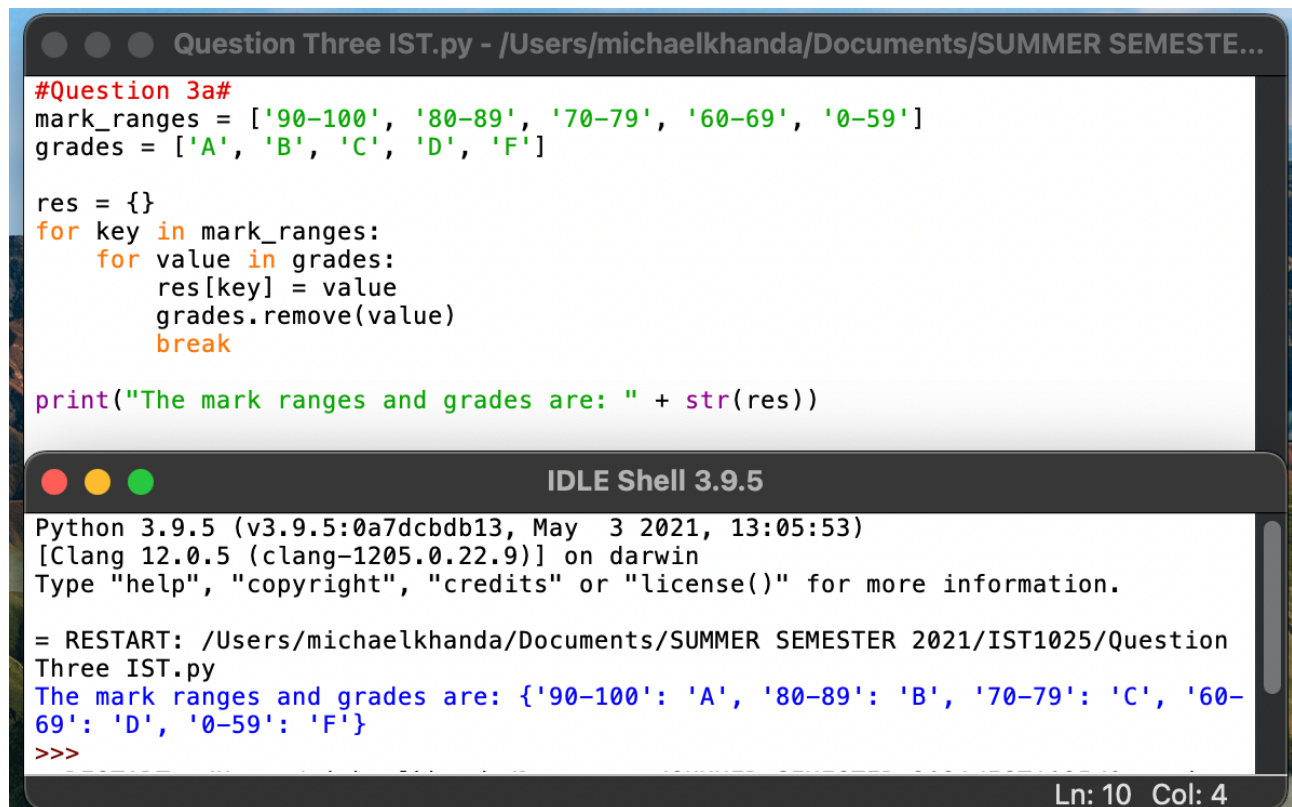
res = {}
for key in mark_ranges:
    for value in grades:
        res[key] = value
        grades.remove(value)
        break

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
```

The execution output in the IDLE Shell 3.9.5 shows the dictionary printed twice, followed by a list of grade-range pairs:

```
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
>>>
```



The image shows a screenshot of a Python IDE window titled "Question Three IST.py - /Users/michaelkhanda/Documents/SUMMER SEMESTE...". The script defines two lists: `mark_ranges` with values `'90-100'`, `'80-89'`, `'70-79'`, `'60-69'`, and `'0-59'`; and `grades` with values `'A'`, `'B'`, `'C'`, `'D'`, and `'F'`. A loop iterates over `mark_ranges`, and for each key, it iterates over `grades` to find a match, adding the key-value pair to a dictionary `res` and then removing the value from `grades`. Finally, it prints the dictionary. Below the script, the "IDLE Shell 3.9.5" window shows the execution output, including the restart message and the printed dictionary: `{'90-100': 'A', '80-89': 'B', '70-79': 'C', '60-69': 'D', '0-59': 'F'}`.

```
#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