1811ICT/2807ICT/7001ICT Programming Principles Workshop 3

School of Information and Communication Technology

Griffith University

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| Goals | In this workshop we create interactive scripts. |
| When | Workshops from Friday 1 April to Thursday 7 April |
| Marks | 3 |
| Due | Pre-workshop questions before the start of the above mentioned workshops  Workshop programming problems by 11:59pm on 10 April |

# Before your workshop class:

* Read all of this document.
* Review the lecture notes sections 1 to 11.
* **Complete the pre-workshop questions (1 mark) posted on the course website and submit the answers for marking**.

# Workshop activities (2 marks)

At any stage, when you are stuck, *ask your tutor*!

## Problem 1

*Problem:* The grades at a university are awarded based on the marks awarded for the course out of 100. Marks of 85 or above receive the grade of 7. Marks less than 85 but that are 75 or above receive the grade of 6. Marks less than 75 but that are 65 or above receive the grade of 5. Marks less than 65 but that are 50 or above receive the grade of 4. Anything less than 50 gets the grade of F. Write a program that asks the user to input the marks and prints the grade awarded.

Example:

How many marks? 85

Grade awarded: 7

*Answer:* Submit your code as problem1.py and insert screenshots of your program output for the following two scenarios:

* How many marks? 79.5
* How many marks? 65

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# Matthew Prendergast

# 1st April, 2022 - Problem 1 (Workshop - Week 3)

# Input the grade.

grade = float(input("How many marks? "))

# Less than 50 marks = F

if grade < 50:

    print("Grade awarded: F")

# Equal to 50 but less than 65 marks = 485

elif grade < 65:

    print("Grade awarded: 4")

# Equal to 65 but less than 75 marks = 5

elif grade < 75:

    print("Grade awarded: 5")

# Equal to 75 but less than 85 marks = 6

elif grade < 85:

    print("Grade awarded: 6")

# All marks above 85 marks = 7

else:

    print("Grade awarded: 7")

***Insert your screenshots here***

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## Problem 2

*Problem:* A shipping company charges its customer based on the weight of goods and the distance of shipping. A discount is given based on the distance of shipping as follows:

distance < 250km, no discount

250km ≤ distance < 500km, 10% discount

500km ≤ distance < 1000km, 15% discount

1000km ≤ distance < 2000km, 20% discount

2000km ≤ distance < 3000km, 35% discount

3000km ≤ distance, 50% discount

The shipping cost is calculated based on the following equation:

cost = baseprice \* weight \* distance \* (1 - discount).

Write a program that takes as inputs the baseprice, weight, and distance, and prints the shipping cost to be charged to the customer.

Example:

How much is the base price? 0.01

What is the weight? 200

What is the distance? 1000

The shipping cost is 1600.0

*Answer:* Submit your code as problem2.py and insert screenshots of your program output for the following two scenarios:

* Base price: 0.1; Weight: 540; Distance: 2300
* Base price: 0.35; Weight: 350.5; Distance: 734.5

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# Matthew Prendergast

# 1st April, 2022 - Problem 2 (Workshop - Week 3)

# Input the base price, weight and distance.

base = float(input("How much is the base price? "))

weight = float(input("What is the weight? "))

distance = float(input("What is the distance? "))

# Declare and initialise the discount and cost variables.

discount, cost = 0, 0

# Calculate the discount rate.

if distance >= 3000:

    discount = 0.5

elif distance >= 2000:

    discount = 0.35

elif distance >= 1000:

    discount = 0.20

elif distance >= 500:

    discount = 0.15

else:

    discount = 0

# Calculate the shipping cost.

cost = base \* weight \* distance \* (1 - discount)

# Print the output.

print("The shipping cost is", cost)

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## Problem 3

*Problem:* Write a program that takes as input 3 integers and outputs them in descending order.

Examples:

Integer 1? 3

Integer 2? 10

Integer 3? 2

Sorted: 10 3 2

*Answer:* Submit your code as problem3.py and insert screenshots of your program output for the following two scenarios:

* Integer 1: 35; Integer 2: 21: Integer 3: 28
* Integer 1: 25; Integer 2: 33: Integer 3: 43

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# Matthew Prendergast

# 30th March, 2022 - Problem 3 (Workshop - Week 2)

# Input the three integers.

a = int(input("Integer 1? "))

b = int(input("Integer 2? "))

c = int(input("Integer 3? "))

# Print the integers in decending order using nested loops.

if a >= b and a >= c:

    print(a, end=" ")

    if b >= c:

        print(b, c)

    else:

        print(c, b)

elif b >= a and b >= c:

    print(b, end=" ")

    if a >= c:

        print(a, c)

    else:

        print(c, a)

else:

    print(c, end=" ")

    if a >= b:

        print(a, b)

    else:

        print(b, a)

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## Problem 4

*Problem:* A car dealer earns a base wage of $36.25 per hour up to their normal work week of 37 hours. Only whole hours are counted. If he works more hours than that (overtime) he gets paid at 1.5 times his normal rate for the overtime. If he sells more than 5 cars in a week, he gets a bonus of $200 per car from the 6th car sold. Write a program that takes as input the number of hours worked and the total number of cars sold for the week, and outputs the car dealer’s total salary for the week.

Examples:

How many hours were worked? 41

Total number of cars sold for the week? 10

The salary is 2558.75

How many hours were worked? 36

Total number of cars sold for the week? 3

The salary is 1305.0

*Answer:* Submit your code as problem4.py and insert screenshots of your program output for the following two scenarios:

* Hours worked: 25; Number of cars sold: 10
* Hours worked: 40; Number of cars sold: 5

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# Matthew Prendergast

# 30th March, 2022 - Problem 4 (Workshop - Week 2)

# Input the values

hours = int(input("How many hours were worked? "))

cars\_sold = int(input("Total number of cars sold for the week? "))

# Declare and initialise the variables to use.

RATE = 36.25

base\_salary, overtime, bonus = 0, 0, 0

# Calculate the car sales bonus.

if cars\_sold > 5:

    bonus = (cars\_sold - 5) \* 200

# Calculate the salary based on the number of hours inputted.

if hours > 37:

    base\_salary = 37 \* RATE

    overtime = (hours - 37) \* RATE \* 1.5

else:

    base\_salary = hours \* RATE

# Print the salary.

print("The salary is ", base\_salary + overtime + bonus)

***Insert your screenshots here***

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# Submission and marking

The pre-workshop can be accessed and submitted online using the provided link in the course website. Students get 1 mark if they get >50% in pre-workshop questions, or 0.5 mark if they get 0%-50% in pre-workshop questions, or 0 marks without any attempt.

For workshop tasks, please submit this document with copied codes and inserted screenshots using the provided submission link in the course website. Students get 2 marks if they complete three or more problems correctly, or 1 mark if they complete one or two problems correctly, or 0 marks without any attempt.