Assignment 1: gryphTravels

Weight: 7% Topics: Assignment, Branches and Loops

1.0 Your task (90%)
Assume that you work for GryphTravels Inc., that only caters to Air Canada flights between Toronto and Montreal. Write a C program that performs 7 different tasks described below for this company. The Air Canada flights between Toronto and Montreal have the following daily departure and arrival times:

Departure	Arrival	Cost
7:15am	8:25am	$231
8:15am	9:25am	$226
9:15am	10:25am	$226
10:15am	11:25am	$283
11:15am	12:25pm	$283
3:15pm	4:25pm	$226
4:15pm	5:25pm	$226
5:15pm	6:25pm	$401

Task1: Customer's choice of time format
Here, customers are prompted to input the time of their choice using either 12-hour or 24-hour format, so that they can be informed of the flight departure time closest to their choice. When prompted, the customer enters a choice of 1 for entering a 12-hour format; whereas 2 is entered for 24-hour format. If the customer's choice is 1 (indicating a 12-hour format), the customer is prompted to enter the hours and minutes and a character 'p' for pm or 'a' for am. The time is then displayed in both 12-hour and 24-hour format. If the customer's choice is 2 (indicating a 24-hour format), then the customer is prompted to enter hours and minutes. The time is then displayed in both 24-hour and 12-hour formats. Section 3.0 shows some sample input/output scenarios.

Task2: Closest departure time
Based on the time entered by the customer, the closest departure time is displayed using 12-hour format.

Task3: Do you need a hotel?
Next, the customer is asked if they would like a hotel in Montreal – and for how many days. The available hotels and cost of a room per night are:

Marriott: $248
Sheraton: $90
Double Tree: $128

Task4: Do you need a ride to the hotel?
If the customer chooses to stay in a hotel, then they may need a ride. So the customer is finally asked if they need a ride from the airport to the hotel. Cost of the ride is as given below:

Marriott: $0
Sheraton: $25
Double Tree: $20

Task 5: Total cost
Calculate the total cost (before taxes) and display it (flight + hotel for *n* number of days + ride).

Task6: Freebees
GryphTravels Inc., being a new company, offers some discounts to its customers. It prompts the customer to enter their day of birth.

Discount1: If the dollar amount of the total cost is a multiple of 11, then the customer gets a 5% discount.

Discount2: An additional discount of 5% is given to those customers whose sub-total after discount1 is a multiple of the sum of digits of the customer's day of birth. Three examples are given below for your convenience. See Sample Input / output for more clarification.

- Example 1: If day of birth entered is 3, the customer will get an additional 5% discount if the sub-total of their purchase after discount1 is a multiple of 3.
- Example 2: If day of birth entered is 12, the customer will get an additional 5% discount if their purchase after discount1 is a multiple of 3 (since sum of digits of day of birth (12) is 3).

Task 7: Net cost
Finally, 13% tax is applied to the total cost and the final bill is displayed. See section 3.0 for a few sample scenarios and how your final bill must be displayed.

2.0 Additional Functionality: 10%

By completing the above task given in section 1.0 correctly, you have the potential to earn up to 90% of the grade for this assignment. By going beyond the material given and completing the task below (task E1), you have the potential of earning another 10% for a total of 100%

Task E1: Best possible option

Allow the customer to enter 3 different sets of input values for tasks 1 to 7. Find and inform the customer of the cheapest offer using a display message such as:

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Option number 2 is the best option for you with a minimum cost $235.58
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3.0 Test Program Execution (Three sample Scenarios are given below)

<u>Scenario 1:</u> Choice of 12-hour format; No hotel needed (and therefore no ride); gets discount1; does not get discount2

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Would you like to enter the time in 12-hour format (enter 1) or 24-hour format (enter 2)? 1

Enter time in 12 hour format

Enter a value between 0 and 12 for hour: 7
Enter a value between 0 and 60 for minutes: 5
Enter a for am or p for pm: a

---------------------------
You entered 07:05 am
In 24 hour format - you entered 07:05
---------------------------
Closest departure times is 7:15 a.m., arriving at 8:25 a.m.

Would you like a hotel in Montreal - enter 0 for no; 1 for yes? 0

Now enter your day of birth to qualify for discount2: 2

Your total cost comes to:

Cost of closest departure flight: $ 231.00
Cost of Hotel for 0 days: $ 0.00
Cost of Ride: $ 0.00

Total cost before tax: $ 231.00

You get a 5% discount because the total cost was a multiple of 11 :)
Sorry - you missed out on the additional 5% discount because the total cost after discount1
was not a multiple of the sum of digits in your day of birth

Total cost after discounts 1 and 2: $ 219.45

Finally, your total cost after taxes: $ 247.98
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<u>Scenario 2:</u> Choice of 24-hour format; No Hotel needed (and therefore no ride); does not get discount1; gets discount2 – day of birth entered as 2-digit number.

```
Would you like to enter the time in 12-hour format (enter 1) or 24-hour format (enter 2)? 2

Enter time in 24 hour format

Enter a value between 0 and 24 for hour: 13
Enter a value between 0 and 60 for minutes: 45
---------------------------
You entered 13:45
In 12 hour format - you entered 01:45 pm
---------------------------
Closest departure times is 3:15 p.m., arriving at 4:25 p.m.

Would you like a hotel in Montreal - enter 0 for no; 1 for yes? 0

Now enter your day of birth to qualify for discount2: 11

Your total cost comes to:
Cost of closest departure flight: $ 226.00
Cost of Hotel for 0 days: $ 0.00
Cost of Ride: $ 0.00

Total cost before tax: $ 226.00

Sorry - you missed out on 5% discount because the total cost was not a multiple of 11
You get an additional 5% discount because the total cost after discount1 was a multiple
of the sum of digits in your day of birth :)

Total cost after discounts 1 and 2: $ 214.70

Finally, your total cost after taxes: $ 242.61
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<u>Scenario 3:</u> Choice of 12-hour format; Hotel needed (and therefore is prompted for a ride); does not get discount1 or discount2

```
Would you like to enter the time in 12-hour format (enter 1) or 24-hour format (enter 2)? 1

Enter time in 12 hour format

Enter a value between 0 and 12 for hour: 8
Enter a value between 0 and 60 for minutes: 10
Enter a for am or p for pm: a
---------------------------
You entered 08:10 am
In 24 hour format - you entered 08:10
---------------------------
Closest departure times is 8:15 a.m., arriving at 9:25 a.m.

Would you like a hotel in Montreal - enter 0 for no; 1 for yes? 1

There are 3 hotels:
1. Marriott: $248 per night
2. Sheraton: $90 per night
3. Double Tree: $128 per night

Your choice?:1
How many days in Montreal?2

Would you like a ride from airport to hotel? - enter 0 for no; 1 for yes 0

Now enter your day of birth to qualify for discount2: 3

Your total cost comes to:

Cost of closest departure flight: $ 226.00
Cost of Hotel for 2 days: $ 496.00
Cost of Ride: $ 0.00

Total cost before tax: $ 722.00

Sorry - you missed out on 5% discount because the total cost was not a multiple of 11
Sorry - you missed out on the additional 5% discount because the total cost after discount1
was not a multiple of the sum of digits in your day of birth

Total cost after discounts 1 and 2: $ 722.00

Finally, your total cost after taxes: $ 815.86
```

4.0 Submission Instructions

- Submit a single C file containing your program. To submit, upload your C file to the submission box for A1 on moodle. Name your file as lastnameFirstnameA1.c (For example, if Ritu is the first name and Chaturvedi is the last name, the file would be called chaturvediRituA1.c). Incorrect file name will result in 10% penalty.
- Incorrect format of submitted files will result in automatic zero. (Must be a valid .c file)
- The program you submit must compile with no warnings and run successfully for full marks. You get a zero if your program doesn't compile. There is also a penalty for warnings (5% for each unique warning).
- Penalties will occur for missing style, comments, header comments etc.
- Use the template given below for header comment.
  /!\ Note: The file name, student name and email ID must be changed per student.

```
/************************lastnameFirstnameA1.c**************

   Student Name: Ritu Chaturvedi     Email Id: ritu
   Due Date: ……                     Course Name: CIS 1300
   I have exclusive control over this submission via my password.
   By including this statement in this header comment, I certify that:

   1) I have read and understood the University policy on academic
   integrity;

   2) I have completed the Computing with Integrity Tutorial on Moodle; and

   3) I have achieved at least 80% in the Computing with Integrity Self
   Test.

   I assert that this work is my own. I have appropriately acknowledged any
   and all material that I have used, whether directly quoted or
   paraphrased. Furthermore, I certify that this assignment was prepared by
   me specifically for this course.

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```

- The program file must contain instructions for the TA on how to compile and run your program in a header comment.

  /!\ Note: The file name must be changed per student.

```
/*********************************************************
   Compiling the program
   The program should be compiled using the following flags: -std=c99 -Wall

   compiling:
   gcc lastnameFirstnameA2.c -std=c99 -Wall
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   OR
   gcc lastnameFirstnameA1.c -std=c99 -Wall -o assn1

   Running the Program
   Running: ./a.out

    OR
    Running: ./assn2
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- DO NOT use global variables. Use of any global variables will result in automatic zero.
- DO NOT use goto statements. Use of any goto statements will result in automatic zero.