CSE108 – Computer Programming Lab.

Lab 5

Selections, loops

Due at 10am.

Hand in: A student with number 20180000001 should hand in a zip file named 20180000001.zip for this lab.

Part 1. You have been hired by a company to develop a temperature conversion program that can convert temperatures between Celsius and Fahrenheit scales. The program should be able to accept user input and display the converted temperature.

Your program should use functions, loops, and choices to implement the following features:

A function to display a menu of options for the user to choose from. The menu should include the following options:

a) Convert Celsius to Fahrenheit

b) Convert Fahrenheit to Celsius

c) Quit

A function to accept user input based on the selected menu option. The user should be prompted to input the temperature value to convert. A function to perform the temperature conversion based on the selected menu option. The program should display the converted temperature value. The program should use loops to allow the user to continue converting temperatures until they choose to quit.

° C = 5/9 x (° F - 32)
°F = °C × (9/5) + 32.

Output:

```
Temperature Conversion Menu

1. Convert Celsius to Fahrenheit

2. Convert Fahrenheit to Celsius

3. Quit

Enter your choice (1-3): 1

Enter the temperature value to convert: 25

25.00 Celsius = 77.00 Fahrenheit

Temperature Conversion Menu

1. Convert Celsius to Fahrenheit
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```
2. Convert Fahrenheit to Celsius

3. Quit

Enter your choice (1-3): 2

Enter the temperature value to convert: 96

96.00 Fahrenheit = 35.56 Celsius
```

Part 2. Write a C program that reverses an integer entered by the user. The program should check whether the number it entered is 3, 4 or 5 digits and reject entries that do not meet these criteria. The program should calculate the inverted number and print it to the screen.

Output:

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Enter a number (3, 4, or 5): 78963

Reversed number: 36987
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Part 3. Write a program that calculates the base 10 equivalent of a given number and its bases 2, 8, and 16 equivalents. Your program should prompt the user to enter a number and print the results to the screen. Your program must use functions, loops, and options to execute operations.

Output:

```
Menu:

1. Convert a number to decimal, binary, octal, and hexadecimal

2. Quit

Enter your choice: 1

Enter a number: 56

Decimal equivalent: 56

Binary equivalent: 16

Octal equivalent: 46

Hexadecimal equivalent: 56


Menu:

1. Convert a number to decimal, binary, octal, and hexadecimal

2. Quit
```

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Enter your choice:
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General Rules:

1. You will have two hours to provide a solution to the given problem set.
2. You will be able to hand in your solutions via Teams in the next two hours. The submission will be closed exactly at 10am.
3. There will be an interview session immediately after the submission deadline. Starting at 10am, you will be randomly invited to attend a meeting by a TA to demonstrate your solution and answer any questions asked by the TA.
4. You must be available until 1pm to respond to the demo invitation whenever you receive it. You will have 3 minutes after you are called via Teams. If you do not answer/appear in 3 minutes, you will miss you interview.
5. If you miss your interview or are unable to give satisfactory answers to the questions, you will receive a zero for that lab even if you have submitted your solution.
6. If you have not submitted a solution in time, you will not be invited for the interview and receive zero for that lab.
7. Due to time constraints, some students may not be invited to an interview. In that case, their solutions will be graded offline.
8. Unless you aren't declared for a specific prototype, you may use arbitrary but proper function and variable names that evoke its functionality.
9. The solution must be developed on given version of OS and must be compiled with GCC compiler, any problem which rises due to using another OS or compiler won't be tolerated.
10. Note that if any part of your program is not working as expected, then you can get zero from the related part, even it is working partially.
11. Zip your solution file before uploading it to MS Teams. The zip file must contain the C file with your solution and screenshots of the valid outputs of the program.