CSE108 – Computer Programming Laboratory
Spring 2022, Lab 3

This lab will be graded on a scale of 100. No collaboration is permitted.

In the main function, you will create a menu that provides the user with interaction for each written function.

Part 0. *(20 pts) Creating the menu as same as given in the example of output*: You must use a do while loop and switch case statements to implement the menu of the program.

Part 1. *(20 pts)* **X shaped star:** Write a function that prints the X shaped star as given below in the program output. Your function prototype should be exactly below. It takes an integer height which must be an odd number.

void x_star_display(int height);

Part 2. *(20 pts)* **Diamond shaped star:** Write a function that prints the diamond shaped star as given below in the program output. Your function prototype should be exactly below. It takes an integer height which must be an odd number.

void diamond_star_display (int height);

Part 3. *(20 pts) Multiplication table:* Write a function that prints the multiplication table for the given input as size of the table. You may see the program output as an example.

void multiplication_table_display(int size);

Part 4. *(20 pts)* **Palindrome check:** An integer is a palindrome if the reverse of that number is equal to the original number. Write a function which checks if a given integer is palindrome or not.

void is_palindrome_integer(int n);

Example Output:

```
Enter option 1 to x_star_display
Enter option 2 to diamond_star_display
Enter option 3 to multiplication_table_display
Enter option 4 to palindrome check number
Enter option -1 to exit!
1
Enter an odd integer as the height:5
*     *
 *   *
  *
 *   *
*     *

Enter option 1 to x_star_display
Enter option 2 to diamond_star_display
Enter option 3 to multiplication_table_display
Enter option 4 to palindrome check number
Enter option -1 to exit!
2
Enter an odd integer as the height:5
   *
  * *
 *   *
  * *
   *

Enter option 1 to x_star_display
Enter option 2 to diamond_star_display
Enter option 3 to multiplication_table_display
Enter option 4 to palindrome check number
Enter option -1 to exit!
3
Enter an integer as the size:5
     1  2  3  4  5
  ---------------
1*   1  2  3  4  5
2*   2  4  6  8 10
3*   3  6  9 12 15
4*   4  8 12 16 20
5*   5 10 15 20 25

Enter option 1 to x_star_display
Enter option 2 to diamond_star_display
Enter option 3 to multiplication_table_display
Enter option 4 to palindrome check number
Enter option -1 to exit!
4
Enter an integer as the palindrome:2002
2002 is a palindrome.

Enter option 1 to x_star_display
Enter option 2 to diamond_star_display
Enter option 3 to multiplication_table_display
Enter option 4 to palindrome check number
Enter option -1 to exit!
-1
```