1. Develop a C program that facilitate the selection of a pattern by entering a, b or c. Then the program generates and displays the appropriate pattern. Assume that option a, b and c represents pattern 1, pattern2 and Pattern 3 respectively.

   Your program must generate an error message when an incorrect option is selected.

Pattern 1
```
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
6 6 6 6 6 6
7 7 7 7 7 7 7
8 8 8 8 8 8 8 8
```

Pattern 2
```
    1
  2 3 2
 3 4 5 4 3
4 5 6 7 6 5 4
5 6 7 8 9 8 7 6 5
```

Pattern 3
```
*
 * *
* * *
* * * *
* * * * *
* * * * * *
* * * * *
* * * *
* * *
* *
*
```

2. Write a C program using any repetitive structure (loop) to display the star pattern shown below.

```
* * * * *
*     *
*     *
*     *
* * * * *
```

Your program must facilitate to adjust the size of square. When user input the size of the length, square must be adjusted to the appropriate size.
(i.e for above image size=5)

Rewrite your C program by using a different repetitive structure.

3. Write a C program to read the radius (r1 and r2) of two circles , from the user as keyboard input and display the area of two circles separately on the screen (πr2 , π=3.14). Then the program need to output difference between the areas of two circles.

4. Write a function which checks whether page of a book is in left side or right side when page number is given. Note that numbering starts from the very first page.

5. Write a C program that asks the user to type 10 integers and writes the smallest value.

6. Write a program that asks the user to type an integer N and computes the sum of the cubes from 5^3 to N^3.

7. At ABC movie theatre, each customer pays Rs. 150, and a show costs Rs. 2000 to the theatre and Rs. 30 per attendee. Find the profit the theatre makes with 520 attendees.

8. Write a program that asks the user to type a positive integer. When the user types a negative value the program writes ERROR and asks for another value. When the user types 0 that means that the last value has been typed and the program must write the average of the positive integers. If the number of typed values is zero the program writes 'NO AVERAGE'.

9. Write a program that asks the user to type a random number. Write in the output if this number is a prime number or not. Write which numbers your number can be divided by.

10. Write a program that is able to compute some operations on a given integer. The program writes the output value of the integer and writes the following menu :

    - Add 1
    - Multiply by 2
    - Subtract 4
    - Quit