1. Print the following shapes using **loop(s)**

```
1 *****        12345 &        @
12 ****        1234 &&        @ @
123 ***        123 &&&        @   @
1234 **        12 &&&&        @     @
12345 *        1 &&&&&        @       @
123456         &&&&&&         @ @ @ @ @
```

2. Write a program to generate the following output **(in the given layout)** using **loop(s)**.

```
1    10   11   20   21   30
2    9    12   19   22   29
3    8    13   18   23   28
4    7    14   17   24   27
5    6    15   16   25   26
6    5    16   15   26   25
7    4    17   14   27   24
8    3    18   13   28   23
9    2    19   12   29   22
10   1    20   11   30   21
```

3. Write a program that takes the height and width of a square and print the box of that height and width with alphabet '**B**'. E.g. if user presses **5** for height and **8** for width, your program should print the following. **(Restrict the user such that height or width should not be equal to zero)**.

```
B B B B B B B B
B B B B B B B B
B B B B B B B B
B B B B B B B B
B B B B B B B B
```

4. Develop a program that inputs 10 different integers within a **while loop** and displays the **largest as well as smallest. (Repetition of numbers is not allowed)**.

5. Write a program that asks the base and exponent (power) from user and print the result using **do while loop**. e.g. If base is **2** and exponent is **3**, so **2*2*2** is **8**.

6. Using **for loop**, print the result of **multiplication of all odd** numbers from **1 to 20** and the result of **sum of all even** numbers from **1 to 100.**

7. Print the following shapes using **loop(s)**

8. Take an integer input from the user, print **YES** if it is prime number and **NO** if it not a prime number. **(Prime number is a number which is only divisible by 1 or itself).**
9. using **do while** print the number of digits this number contains.

10. Take two numbers from the user and print the result of multiplication and sum of all the numbers between these two numbers. E.g. if user presses 3 and 8 then **4+5+6+7** is **22** and **4*5*6*7** is **840**. **(Restrict the user such that first number must be less than the second number).**

11. Take an integer input from the user and count all prime numbers from 1 up to that number, print the total number of prime numbers as well as the largest one. E.g. if user presses 20, your program should print "**Total number of prime numbers are: 8**" (as prime numbers from 1 to 20 are **1, 3, 5, 7, 11, 13, 17, 19**) and "**Largest prime number is: 19**".

12. Write a program which asks the user "How many prime numbers you want to print: ", you have to print that much prime numbers as well as the sum of all printed prime numbers. If user presses 11, your program should print first eleven prime numbers, these are **1 3 5 7 11 13 17 19 23 29 31** and sum of these printed numbers, that is **159**. **(Restrict the user such that input should not be negative).**

13. Take two integer arrays of 10 indices each and initialize them. Then copy the contents of both of the arrays in a third array, one consecutive index from one array at a time.

E.g. if the array1 has 1 2 3 4 5 6 7 8 9 10 stored and array2 has 11 12 13 14 15 16 17 18 19 20 stored then array three will have 1 11 2 12 3 13 4 14 5 15 6 16 7 17 8 18 9 19 10 20 stored.

14. Initialize integer array with 10 random values. Then print the second smallest as well as second largest element from that array. (E.g. 23 7 2 56 3 8 9. here second largest is 23 and second smallest is 3). you code might not work for 1 2 2 2 2 5 5 8 8 8 8 8, second largest is 5 and second smallest is 2. You have to check ur program with many test cases.

15. Declare an array and take input from the user in that array, ask the user to enter an integer and you have to print index number of that integer. if that number exists 2 or more time at different indexes then u have to print all indexes having that integer input.

16. Declare array and take input from the user to fill that array, take two integer input from the user, you have to find indexes of those numbers and than exchange those number. if 45 comes at index 3 and 67 comes at index 9. After exchange, index 3 should contain 67 and index 9 should contain 45.

17. Declare and take input from the user in two arrays a and b, you have to print all the numbers which exist in both the arrays.

18. Declare and take input from the user in character array, and you have to print total number of vowels in that array (e.g. d t i o o a r w h s h w q n x b , total number of vowels are 4 (as i o o a)).

19. Take two arrays of character type and take input from the user, you have to exchange the elements of both arrays. array A should contains elements of B, and B should contain the elements of A.