



INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Programming in C and C++ (CSC-101)

Assignment 6

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Q-1) Write a program to print all numbers from 1 to 50, but skip those divisible by 3 using `continue` inside a `for` loop.

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question1 — □ ×  
#include <stdio.h>  
  
int main() {  
    int i;  
    for (i=1;i<51;i++) {  
        if (i%3 != 0){  
            printf("%d\n",i);  
        }  
        return 0;  
    }  
}
```

1,1 All

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question1 — □ ×  
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question1$ vim q1.c  
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question1$ gcc q1.c && ./a.out  
1  
2  
4  
5  
7  
8  
10  
11  
13  
14  
16  
17  
19  
20  
22  
23  
25  
26  
28  
29  
31  
32  
34  
35  
37  
38  
40  
41  
43  
44  
46  
47  
49  
50  
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question1$
```

Q-2) Write a C program that takes an integer input from the user and determines whether the entered number is even or odd using switch case. Note: you are not allowed to use if-else statement.

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question2
#include <stdio.h>
int main() {
    int n;
    printf("Enter the value of integer : ");
    scanf("%d",&n);

    int b = n%2;
    switch(b) {
        case 0 :{printf("Entered integer is 'Even'\n");
                  break;}
        case 1 : {printf("Entered integer is 'Odd'\n");
                  break;}
        default: printf("Error!!Entered value is not integer.\n");
    }
    return 0;
}
```

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```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question2
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question2$ vim q2.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question2$ gcc q2.c && ./a.out
Enter the value of integer : 65
Entered integer is 'Odd'
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question2$ gcc q2.c && ./a.out
Enter the value of integer : 48
Entered integer is 'Even'
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question2$ gcc q2.c && ./a.out
Enter the value of integer : 69
Entered integer is 'Odd'
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question2$ gcc q2.c && ./a.out
Enter the value of integer : 100
Entered integer is 'Even'
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question2$
```

Q-3) Two numbers are entered through the keyboard. Write a program to find the HCF and LCM of those numbers.

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question3 — □ ×
#include<stdio.h>

int main() {
    int a , b;
    printf("Enter the first integer:");
    scanf("%d",&a);
    printf("Enter the second integer:");
    scanf("%d",&b);

    int i;
    int HCF;

    for(i = 1; i<=a, i<=b ; i++) {
        int x = a%i , y = b%i ;
        if(x == 0 && y == 0) {
            HCF = i;
        }
    }
    printf("HCF : %d\n",HCF);
    printf("LCM : %d\n",(a*b)/HCF);
    return 0;
}
```

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```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question3 — □ ×
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question3$ vim q3.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question3$ gcc q3.c && ./a.out
Enter the first integer:65
Enter the second integer:48
HCF : 1
LCM : 3120
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question3$ gcc q3.c && ./a.out
Enter the first integer:54
Enter the second integer:18
HCF : 18
LCM : 54
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question3$ gcc q3.c && ./a.out
Enter the first integer:9
Enter the second integer:8
HCF : 1
LCM : 72
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question3$ gcc q3.c && ./a.out
Enter the first integer:856
Enter the second integer:754
HCF : 2
LCM : 322712
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question3$
```

Q-4) Find the maximum of N numbers using a do-while loop.

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question4
#include <stdio.h>

int main() {
    int n , i = 2 ;
    printf("Enter the value of n:");
    scanf("%d",&n);

    int temp1 ,temp2 ;
    printf("Enter the numbers:\n\t\t");
    scanf("%d",&temp1);

    while(i <= n) {
        printf("\t\t");
        scanf("%d",&temp2);
        if(temp2 > temp1) {
            temp1 = temp2;
        }
        i++;
    }

    printf("The Maximum of the numbers is :%d\n",temp1);

    return 0;
}
```

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```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question4
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question4$ vim q4.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question4$ gcc q4.c && ./a.out
Enter the value of n:5
Enter the numbers:
      8
     56
     48
     25
      6
The Maximum of the numbers is :56
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question4$ gcc q4.c && ./a.out
Enter the value of n:4
Enter the numbers:
     897
     584
     156
     254
The Maximum of the numbers is :897
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question4$
```

Q-5) Write a program that takes a number (1–12) and uses a switch statement to print how many days are in that month (assume it's not a leap year).

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question5
#include<stdio.h>

int main() {
    int m;
    printf("Enter the number code for month:");
    scanf("%d",&m);

    switch(m) {
        case 1:
        case 3:
        case 5:
        case 7:
        case 8:
        case 10:
        case 12:
            printf("Given month has 31 days.\n");
            break;

        case 2:
            printf("Given month has 28 days.\n");
            break;

        case 4:
        case 6:
        case 9:
        case 11:
            printf("Given month has 30 days.\n");
            break;
        default : printf("Error!! Invalid month.\n");
    }
    return 0;
}
```

1,1 All

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question5
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question5$ vim q5.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question5$ gcc q5.c && ./a.out
Enter the number code for month:5
Given month has 31 days.
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question5$ gcc q5.c && ./a.out
Enter the number code for month:9
Given month has 30 days.
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question5$ gcc q5.c && ./a.out
Enter the number code for month:10
Given month has 31 days.
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question5$ gcc q5.c && ./a.out
Enter the number code for month:2
Given month has 28 days.
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question5$
```

Q-6) Write a C program to print the Fibonacci Series.

```
garvmehtha991@omnitrix-1000: ~/25114035/Assignment6/Question6
#include <stdio.h>

int main() {
    int a = 1, b = 1 ;

    while(a > 0) {

        printf("%d\n",a);
        a = a + b;
        printf("%d\n",b);
        b = a + b;
    }
    return 0;
}
-- INSERT --
```

```
garvmehtha991@omnitrix-1000: ~/25114035/Assignment6/Question6
garvmehtha991@omnitrix-1000:~/25114035/Assignment6/Question6$ vim q6.c
garvmehtha991@omnitrix-1000:~/25114035/Assignment6/Question6$ gcc q6.c && ./a.out
1
1
2
3
5
8
13
21
34
55
89
144
233
377
610
987
1597
2584
4181
6765
10946
17711
28657
46368
75025
121393
196418
317811
514229
832040
1346269
2178309
3524578
5702887
9227465
14930352
24157817
39088169
63245986
102334155
165580141
267914296
433494437
701408733
1134903170
1836311903
garvmehtha991@omnitrix-1000:~/25114035/Assignment6/Question6$
```

Q-7) Write a C program to find the factorial of a number.

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question7
#include <stdio.h>

int main() {
    int n ;
    printf("Enter the number:");
    scanf("%d",&n);
    int i = n-1 ;
    int f = n;
    printf("Factorial of n = %d",n);
    while(i < n && i>=1) {
        printf(" * %d",i);
        f = f*i ;
        i--;
    }
    printf(" = %d\n",f);
    return 0;
}
```

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```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question7
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question6$ cd ../Question7
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question7$ vim q7.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question7$ gcc q7.c && ./a.out
Enter the number:5
Factorial of n = 5 * 4 * 3 * 2 * 1 = 120
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question7$ gcc q7.c && ./a.out
Enter the number:7
Factorial of n = 7 * 6 * 5 * 4 * 3 * 2 * 1 = 5040
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question7$ gcc q7.c && ./a.out
Enter the number:8
Factorial of n = 8 * 7 * 6 * 5 * 4 * 3 * 2 * 1 = 40320
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question7$ gcc q7.c && ./a.out
Enter the number:9
Factorial of n = 9 * 8 * 7 * 6 * 5 * 4 * 3 * 2 * 1 = 362880
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question7$
```


Q-8) Write a C program to multiply two numbers without using the * operator.

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question8
#include <stdio.h>

int main() {
    int a ,b ;
    printf("Enter the first integer :");scanf("%d",&a);
    printf("Enter the second integer :");scanf("%d",&b);
    int p = 0 ;
    int i = 1 ;
    while(i <= a){
        p = p + b ;
        i++;
    }
    printf("Product : %d\n",p);
    return 0;
}
```

1,1 Top

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question8
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question8$ vim q8.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question8$ gcc q8.c && ./a.out
Enter the first integer :9
Enter the second integer :47
Product : 423
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question8$ gcc q8.c && ./a.out
Enter the first integer :87
Enter the second integer :23
Product : 2001
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question8$ gcc q8.c && ./a.out
Enter the first integer :117
Enter the second integer :11
Product : 1287
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question8$
```

Q-9) Write a program to find the reverse of a number using do-while, while, for loop.

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question9
#include <stdio.h>

int main() {
    int n;
    printf("Enter the number :");scanf("%d",&n);

    int temp = n ;
    printf("Using while loop :");

    int d;
    while(temp!=0) {
        d = temp%10;
        temp =(int)(temp - d)/10 ;
        printf("%d",d);
    }

    printf("\n");

    printf("Using do-while loop:");
    int temp1 = n;
    do {
        d = temp1%10;
        temp1 =(int)(temp1 - d)/10 ;
        printf("%d",d);
    } while(temp1 != 0);
    printf("\n");

    printf("Using for loop :");
    int temp2;
    for(temp2 = n ; temp2 != 0 ; temp2 = (int)(temp2 - d)/10) {
        d = temp2%10;
        printf("%d",d);
    }
    printf("\n");

    return 0;
}
```

1,1 Top

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question9
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question9$ vim q9.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question9$ gcc q9.c && ./a.out
Enter the number :458
Using while loop :854
Using do-while loop:854
Using for loop :854
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question9$ gcc q9.c && ./a.out
Enter the number :98756
Using while loop :65789
Using do-while loop:65789
Using for loop :65789
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question9$ gcc q9.c && ./a.out
Enter the number :25604
Using while loop :40652
Using do-while loop:40652
Using for loop :40652
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question9$
```

Q-10) Write a C program to determine whether a given integer n is a power of 2. Additionally, write a separate or the same program to generate the first 50 powers of 2.

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question10
#include<stdio.h>
#include<math.h>

int main() {
    int n;
    printf("Enter the number : ");
    scanf("%d",&n);

    int i;

    for(i=0;n%2 != 1;i++){
        n = (int)n/2;
    }
    if(n == 1){
        printf("Given number is 2 raised to the power %d.\n",i);
    }

    else {printf("Given number is not a power of 2.\n");}

    int j;

    for(j = 1 ; j < 51 ; j++){
        long long int p = pow(2,j);
        printf("2 ^ %d = %lld.\n",j,p);
    }
    return 0;
}
```

1,1 Top

garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question10

garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question10\$ gcc q10.c -lm && ./a.out

Enter the number : 512

Given number is 2 raised to the power 9.

2 ^ 1 = 2.
2 ^ 2 = 4.
2 ^ 3 = 8.
2 ^ 4 = 16.
2 ^ 5 = 32.
2 ^ 6 = 64.
2 ^ 7 = 128.
2 ^ 8 = 256.
2 ^ 9 = 512.
2 ^ 10 = 1024.
2 ^ 11 = 2048.
2 ^ 12 = 4096.
2 ^ 13 = 8192.
2 ^ 14 = 16384.
2 ^ 15 = 32768.
2 ^ 16 = 65536.
2 ^ 17 = 131072.
2 ^ 18 = 262144.
2 ^ 19 = 524288.
2 ^ 20 = 1048576.
2 ^ 21 = 2097152.
2 ^ 22 = 4194304.
2 ^ 23 = 8388608.
2 ^ 24 = 16777216.
2 ^ 25 = 33554432.
2 ^ 26 = 67108864.
2 ^ 27 = 134217728.
2 ^ 28 = 268435456.
2 ^ 29 = 536870912.
2 ^ 30 = 1073741824.
2 ^ 31 = 2147483648.
2 ^ 32 = 4294967296.
2 ^ 33 = 8589934592.
2 ^ 34 = 17179869184.
2 ^ 35 = 34359738368.
2 ^ 36 = 68719476736.
2 ^ 37 = 137438953472.
2 ^ 38 = 274877906944.
2 ^ 39 = 549755813888.
2 ^ 40 = 1099511627776.
2 ^ 41 = 2199023255552.
2 ^ 42 = 4398046511104.
2 ^ 43 = 8796093022208.
2 ^ 44 = 17592186044416.
2 ^ 45 = 35184372088832.
2 ^ 46 = 70368744177664.
2 ^ 47 = 140737488355328.
2 ^ 48 = 281474976710656.
2 ^ 49 = 562949953421312.
2 ^ 50 = 1125899906842624.

garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question10\$

Q-11) Write a C program to simulate a calculator where the user enters two integer numbers and an operator (+, -, *, /, %). The program then carries out the specified operation and displays the result. Write using if statements as well as a switch statement.

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question11
#include<stdio.h>

int main() {
    int a ,b ;
    char c ;

    printf("Enter the operation : ");scanf("%d%c%d",&a,&c,&b);
    printf("Result : ");
    if(c == '+'){
        printf("%d\n",a + b);
    }
    else if(c == '-'){
        printf("%d\n",a - b);
    }
    else if(c == '*'){
        printf("%d\n",a * b);
    }
    else if(c == '%'){
        printf("%d\n",a % b);
    }
    else if(c == '/'){
        printf("%.2f\n",(float)a/b);
    }
    else {printf("Error!!Enter a valid input.\n");}

    return 0;
}

1.1 All
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question11
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question11$ vim q11.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question11$ gcc q11.c && ./a.out
Enter the operation : 8+65
Result : 73
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question11$ gcc q11.c && ./a.out
Enter the operation : 78*58
Result : 4524
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question11$ gcc q11.c && ./a.out
Enter the operation : 65/23
Result : 2.83
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question11$ gcc q11.c && ./a.out
Enter the operation : 54%7
Result : 5
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question11$ gcc q11.c && ./a.out
Enter the operation : 895-256
Result : 639
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question11$
```

Q-12) Write a C program to check if the given two numbers are relatively prime or not.

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question12
#include<stdio.h>

int main() {
    int a , b;
    printf("Enter the first integer:");
    scanf("%d",&a);
    printf("Enter the second integer:");
    scanf("%d",&b);

    int i;
    int HCF;

    for(i = 1; i<=a, i<=b ; i++) {
        int x = a%i , y = b%i ;
        if(x == 0 && y == 0) {
            HCF = i;
        }
    }

    if(HCF == 1) {
        printf("Given numbers are \"Relatively Prime\".\n");
    }
    else {printf("Not \"Relatively Prime\" as HCF = %d\n",HCF);}

    return 0;
}
```

1,1 All

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question12
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question12$ vim q12.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question12$ gcc q12.c && ./a.out
Enter the first integer:56
Enter the second integer:47
Given numbers are "Relatively Prime".
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question12$ gcc q12.c && ./a.out
Enter the first integer:8
Enter the second integer:9
Given numbers are "Relatively Prime".
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question12$ gcc q12.c && ./a.out
Enter the first integer:58
Enter the second integer:48
Not "Relatively Prime" as HCF = 2
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question12$ gcc q12.c && ./a.out
Enter the first integer:895
Enter the second integer:230
Not "Relatively Prime" as HCF = 5
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question12$
```

Q-13) Write a C program that takes a decimal number and prints its binary equivalent and then reverses the bits and prints it.

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question13
#include <stdio.h>
#include <math.h>

int main() {
    int n;
    printf("Enter the number : ");scanf("%u",&n);

    int x = log(n)/log(2);
    printf("In binary :");
    for(;x >= 0;x--){
        int y = ( n & (int)pow(2,x) )/(int)pow(2,x);
        printf("%d",y);
    }
    printf("\nReversed (in binary) : ");
    for(; n > 0 ; n/=2) {
        printf("%d",n%2);
    }
    printf("\n");

    return 0;
}
```

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question13
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question13$ vim q13.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question13$ gcc q13.c -lm && ./a.out
Enter the number : 56
In binary :111000
Reversed (in binary) : 000111
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question13$ gcc q13.c -lm && ./a.out
Enter the number : 4854
In binary :1001011110110
Reversed (in binary) : 0110111101001
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question13$ gcc q13.c -lm && ./a.out
Enter the number : 69
In binary :1000101
Reversed (in binary) : 1010001
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question13$
```

Q-14) Write a C program that does the following:

- 1) Displays a menu with different modes of transport:
 1. Bus - ₹5 per km
 2. Car - ₹10 per km
 3. Train - ₹3 per km 4.
 - Flight - ₹50 per km
- 2) Prompts the user to enter:
 - Choice of transport (1–4)
 - Distance to travel in kilometers
- 3) Uses a switch statement to calculate the total cost based on the selected transport and distance.
- 4) Prints the selected mode of transport, distance, and total price.

```
garvmehtha991@omnitrix-1000: ~/25114035/Assignment6/Question14
#include<stdio.h>

int main() {
    int x , y , z ;
    printf("1. Bus      - ₹5 per km \n");
    printf("2. Car      - ₹10 per km \n");
    printf("3. Train     - ₹3 per km \n");
    printf("4. Flight    - ₹50 per km \n");

    printf("Choose mode of transport (for Bus ,press 1) : ");scanf("%d",&x);

    printf("Enter the distance (in kilometers) :");scanf("%d",&y);

    switch(x) {

        case 1 :
            z = 5 * y ;
            printf("Mode of transport : Bus \nDistance : %d\nTotal Cost : ₹%d\n",y,z);
            break;

        case 2 :
            z = 10 * y ;
            printf("Mode of transport : Car \nDistance : %d\nTotal Cost : ₹%d\n",y,z);
            break;

        case 3 :
            z = 3 * y ;
            printf("Mode of transport : Train \nDistance : %d\nTotal Cost : ₹%d\n",y,z);
            break;

        case 4 :
            z = 50 * y ;
            printf("Mode of transport : Flight \nDistance : %d\nTotal Cost : ₹%d\n",y,z);
            break;

        default : printf("Error!!Enter a valid mode of transport/distance.\n");

    }
    return 0;
}
```

```
garvmehtha991@omnitrix-1000: ~/25114035/Assignment6/Question14
garvmehtha991@omnitrix-1000:~/25114035/Assignment6/Question14$ vim q14.c
garvmehtha991@omnitrix-1000:~/25114035/Assignment6/Question14$ gcc q14.c && ./a.out

1. Bus      - ₹5 per km
2. Car      - ₹10 per km
3. Train     - ₹3 per km
4. Flight    - ₹50 per km
Choose mode of transport (for Bus ,press 1) : 4
Enter the distance (in kilometers) :57
Mode of transport : Flight
Distance : 57
Total Cost : ₹2850
garvmehtha991@omnitrix-1000:~/25114035/Assignment6/Question14$ gcc q14.c && ./a.out

1. Bus      - ₹5 per km
2. Car      - ₹10 per km
3. Train     - ₹3 per km
4. Flight    - ₹50 per km
Choose mode of transport (for Bus ,press 1) : 6
Enter the distance (in kilometers) :84
Error!!Enter a valid mode of transport/distance.
garvmehtha991@omnitrix-1000:~/25114035/Assignment6/Question14$ gcc q14.c && ./a.out

1. Bus      - ₹5 per km
2. Car      - ₹10 per km
3. Train     - ₹3 per km
4. Flight    - ₹50 per km
Choose mode of transport (for Bus ,press 1) : 2
Enter the distance (in kilometers) :83
Mode of transport : Car
Distance : 83
Total Cost : ₹830
garvmehtha991@omnitrix-1000:~/25114035/Assignment6/Question14$
```


Q-15) Write a C program to find the roots of the quadratic equation and display a message that roots are equal or distinct or real or complex.

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question15
#include<stdio.h>
#include<math.h>

int main() {
    float a , b , c , D ;
    printf("Enter coefficient of x²: ");scanf("%f",&a);
    printf("Enter coefficient of x : ");scanf("%f",&b);
    printf("Enter the constant : ");scanf("%f",&c);

    D = b*b - 4*a*c ;
    float x = (-b + sqrt(D))/(2*a);
    float y = (-b - sqrt(D))/(2*a);
    if(D > 0){
        printf("Real and Distinct\n");
        printf("Roots of given quadratic equation are %.2f , %.2f \n",x,y);
    }
    else if(D == 0){printf("Real and Equal\n");
        printf("Roots of given quadratic equation are %.2f , %.2f \n",x,y);
    }

    else if(D < 0){printf("Imaginary roots.\n");}

    return 0;
}
```

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question15
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question15$ vim q15.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question15$ gcc q15.c -lm && ./a.out
Enter coefficient of x²: 1
Enter coefficient of x : 1
Enter the constant : 1
Imaginary roots.
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question15$ gcc q15.c -lm && ./a.out
Enter coefficient of x²: 1
Enter coefficient of x : 5
Enter the constant : 6
Real and Distinct
Roots of given quadratic equation are -2.00 , -3.00
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question15$ gcc q15.c -lm && ./a.out
Enter coefficient of x²: 1
Enter coefficient of x : 2
Enter the constant : 1
Real and Equal
Roots of given quadratic equation are -1.00 , -1.00
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question15$
```

Q17) Write a C program to print the following pattern

Output

```
Enter number of rows: 7
* * * * *
* * * * *
* * * * *
* * * *
* * * *
* * *
* *
*
```

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question17
#include<stdio.h>

int main() {
    int n ;
    printf("Enter number of rows :");scanf("%d",&n);

    int i;
    for(i = n ; i > 0 ;i--){
        int j = i;
        while(j > 0){printf("*");j--;}
        printf("\n");
    }
    return 0;
}
```

1,1 All

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question17
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question17$ vim q17.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question17$ gcc q17.c && ./a.out
Enter number of rows :7
*****
*****
*****
****
***
**
*

garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question17$ gcc q17.c && ./a.out
Enter number of rows :5
*****
****
***
**
*

garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question17$
```

Q18)Write a C program to print the following butterfly pattern

```
Output
Enter the number of rows: 6
*
* *
* * *
* * * *
* * * * *
* * * * *
* * * * *
* * * * *
* * * * *
* * * *
* * *
* *
*
```

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question18
#include<stdio.h>

int main() {
    int n;
    printf("Enter the number of rows : ");scanf("%d",&n);

    int i;
    for(i = 1 ; i <= n ;i++){
        int j , k ;
        for(j = i ; j > 0 ; j--){printf("* ");}
        for(k = 4*(n - i) + 1 ; k > 0 ; k--){printf(" ");}
        for(j = i ; j > 0 ; j--){printf("* ");}
        printf("\n");
    }
    for(i = n - 1 ; i >= 0 ;i--){
        int j , k ;
        for(j = n - i ; j <= n ; j++){printf("* ");}
        for(k = 4*(n - i) - 3 ; k > 0 ; k--){printf(" ");}
        for(j = n - i ; j <= n ; j++){printf("* ");}
        printf("\n");
    }
    return 0;
}
```

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question18
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question18$ vim q18.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question18$ gcc q18.c && ./a.out
Enter the number of rows : 7
*
* *
* * *
* * * *
* * * * *
* * * * *
* * * * *
* * * * *
* * * * *
* * * *
* * *
* *
*

garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question18$ gcc q18.c && ./a.out
Enter the number of rows : 5
*
* *
* * *
* * * *
* * * * *
* * * * *
* * * *
* * *
* *
*

garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question18$
```

Q19) Write a C program that takes an integer input from the user and prints the given pattern of asterisks (*).

for input value : 4

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

for input value : 6

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

```
garvmehtha991@omnitrix-1000: ~/25114035/Assignment6/Question19
#include<stdio.h>

int main() {
    int n;
    printf("Enter the value of n :");scanf("%d",&n);

    int i = 0;
    while(i < n) {
        printf("* ");
        i++;
    }
    printf("\n");
    int j ;
    for(j = 0; j < n - 2 ;j++){
        printf("* ");
        int m ;
        for (m = 0;m < n-2 ;m++){printf(" ");}
        printf("*");
        printf("\n");
    }
    int k = 0;
    while(k < n) {
        printf("* ");
        k++;
    }
    printf("\n");
    return 0;
}
```

7,2-9 All

```
garvmehtha991@omnitrix-1000: ~/25114035/Assignment6/Question19
garvmehtha991@omnitrix-1000:~/25114035/Assignment6/Question19$ vim q19.c
garvmehtha991@omnitrix-1000:~/25114035/Assignment6/Question19$ gcc q19.c && ./a.out
Enter the value of n :4
* * * *
*       *
*       *
* * * *

garvmehtha991@omnitrix-1000:~/25114035/Assignment6/Question19$ gcc q19.c && ./a.out
Enter the value of n :5
* * * * *
*       *
*       *
*       *
* * * * *

garvmehtha991@omnitrix-1000:~/25114035/Assignment6/Question19$ gcc q19.c && ./a.out
Enter the value of n :7
* * * * * *
*       *
*       *
*       *
*       *
*       *
* * * * *
garvmehtha991@omnitrix-1000:~/25114035/Assignment6/Question19$
```

Q20)Write a C program to print a right triangle pattern of characters:

At N=5

Output:

A
BB
CCC
DDDD
EEEE

At n=4

Output:

A
BB
CCC
DDDD

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question20
#include<stdio.h>

int main() {
    int n ;
    printf("Enetr the value of N :");scanf("%d",&n);

    int i = 1 , j ;

    while(i <= n){
        char j = 64 + i ;
        int m = 0;
        for(;m < i; m++){printf("%c",j);}
        printf("\n");
        i++;
    }
    return 0;
}
```

1,1 Top

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question20
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question20$ vim q20.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question20$ gcc q20.c && ./a.out
Enetr the value of N :5
A
BB
CCC
DDDD
EEEE
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question20$ gcc q20.c && ./a.out
Enetr the value of N :7
A
BB
CCC
DDDD
EEEE
FFFFF
GGGGGG
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question20$
```

Q21)C code to print a symmetric number pyramid, where each row forms a centered number pattern (increasing then decreasing)

Output
Enter the number of rows: 10
1
1 2 1
1 2 3 2 1
1 2 3 4 3 2 1
1 2 3 4 5 4 3 2 1
1 2 3 4 5 6 5 4 3 2 1
1 2 3 4 5 6 7 6 5 4 3 2 1
1 2 3 4 5 6 7 8 7 6 5 4 3 2 1
1 2 3 4 5 6 7 8 9 8 7 6 5 4 3 2 1
1 2 3 4 5 6 7 8 9 10 9 8 7 6 5 4 3 2 1

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question21
#include<stdio.h>

int main() {
    int n;
    printf("Enter the number of rows :");scanf("%d",&n);

    int i ,j ,k ,m;

    for(i = 1; i <= n; i++){
        for( m = 0 ; m < 2*(n - i) ; m++ ) {
            printf(" ");
        }
        for( j = 1 ; j <= i ; j++ ) {
            printf("%d ",j);
        }
        for( k = i - 1; k > 0 ; k-- ) {
            printf("%d ",k);
        }
        printf("\n");
    }

    return 0;
}
```

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question21
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question21$ vim q21.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question21$ gcc q21.c && ./a.out
Enter the number of rows :5
1
1 2 1
1 2 3 2 1
1 2 3 4 3 2 1
1 2 3 4 5 4 3 2 1
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question21$ gcc q21.c && ./a.out
Enter the number of rows :8
1
1 2 1
1 2 3 2 1
1 2 3 4 3 2 1
1 2 3 4 5 4 3 2 1
1 2 3 4 5 6 5 4 3 2 1
1 2 3 4 5 6 7 6 5 4 3 2 1
1 2 3 4 5 6 7 8 7 6 5 4 3 2 1
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question21$
```

Q22)Print square within square for numbers.

Output

```
Enter the value of n: 5
5 5 5 5 5 5 5 5
5 4 4 4 4 4 4 5
5 4 3 3 3 3 4 5
5 4 3 2 2 2 3 4 5
5 4 3 2 1 2 3 4 5
5 4 3 2 2 2 3 4 5
5 4 3 3 3 3 4 5
5 4 4 4 4 4 4 5
5 5 5 5 5 5 5 5
```

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question22
#include<stdio.h>

int main() {
    int n , i , j , k ;
    printf("Enter the value of n :");scanf("%d",&n);

    for(i = 1 ; i <= n ;i++ ) {
        for(j = n ; j > n - i + 1 ; j--) {printf("%d ",j);}
        for(k =2*n + 1 - 2*i ; k > 0 ; k-- ){printf("%d ", n - i + 1);}
        for(j = n - i + 2 ; j <= n ; j++){printf("%d ",j);}
        printf("\n");
    }
    for(i = 1 ;i < n ;i++){
        for(j = n ;j > i + 1 ; j--) {printf("%d ",j);}
        for(k = 2*i + 1;k > 0;k--){printf("%d ",i + 1);}
        for(j = i + 2 ; j <= n; j++) {printf("%d ",j);}

        printf("\n");
    }
    printf("\n");

    return 0;
}
```

1,1 Top

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question22
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question22$ vim q22.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question22$ gcc q22.c && ./a.out
Enter the value of n :5
5 5 5 5 5 5 5 5
5 4 4 4 4 4 4 5
5 4 3 3 3 3 4 5
5 4 3 2 2 2 3 4 5
5 4 3 2 1 2 3 4 5
5 4 3 2 2 2 3 4 5
5 4 3 3 3 3 4 5
5 4 4 4 4 4 4 5
5 5 5 5 5 5 5 5

garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question22$ gcc q22.c && ./a.out
Enter the value of n :4
4 4 4 4 4 4 4
4 3 3 3 3 3 4
4 3 2 2 2 3 4
4 3 2 1 2 3 4
4 3 2 2 2 3 4
4 3 3 3 3 3 4
4 4 4 4 4 4 4

garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question22$
```

Q23)Write a program to compute:

$$\text{Sum}=1-2+3-4+5-6+\dots\pm n$$

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question23
#include<stdio.h>

int main() {
    int n ;
    printf("Enter the value of n :");scanf("%d",&n);

    int i , sum = 0;
    for(i=1 ;i<=n;i++) {
        if(i%2 == 1){sum += i;printf("+%d",i);}
        else if(i%2 == 0){sum -= i;printf("-%d",i);}
    }
    printf(" = %d\n",sum);
    return 0;
}
```

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question23
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question23$ vim q23.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question23$ gcc q23.c && ./a.out
Enter the value of n :5
+1-2+3-4+5 = 3
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question23$ gcc q23.c && ./a.out
Enter the value of n :7
+1-2+3-4+5-6+7 = 4
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question23$ gcc q23.c && ./a.out
Enter the value of n :9
+1-2+3-4+5-6+7-8+9 = 5
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question23$ gcc q23.c && ./a.out
Enter the value of n :12
+1-2+3-4+5-6+7-8+9-10+11-12 = -6
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question23$
```


Q24)Compute the sum:

$$\text{Sum}=1!+2!+3!+\dots+n!$$

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question24
#include<stdio.h>

int main() {
    int n ;
    printf("Enter the value of n :");scanf("%d",&n);

    int i , sum = 0;
    for(i = 1 ;i <= n ; i++) {
        int j , Factorial = 1 ;
        for(j = 1 ; j <= i ; j++) {
            Factorial = Factorial * j;
        }
        printf("+%d! ",i);
        sum = sum + Factorial;
    }
    printf(" = %d\n",sum);
    return 0;
}
```

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question24
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question24$ vim q24.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question24$ gcc q24.c && ./a.out
Enter the value of n :5
+1! +2! +3! +4! +5! = 153
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question24$ gcc q24.c && ./a.out
Enter the value of n :7
+1! +2! +3! +4! +5! +6! +7! = 5913
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question24$ gcc q24.c && ./a.out
Enter the value of n :8
+1! +2! +3! +4! +5! +6! +7! +8! = 46233
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question24$ gcc q24.c && ./a.out
Enter the value of n :9
+1! +2! +3! +4! +5! +6! +7! +8! +9! = 409113
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question24$
```

Q25) Write a C program to convert a decimal number to hexadecimal.

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question25
#include <stdio.h>
#include <math.h>

int main() {
    int n ;
    printf("Enter the decimal number : ");scanf("%d",&n);

    int x = log(n)/log(16);

    for(;x >= 0;x--){
        int y = n/((int)pow(16,x));
        n = (n % (int)pow(16,x)) ;
        switch(y) {
            case 10 : printf("A");
                       break;
            case 11 : printf("B");
                       break;
            case 12 : printf("C");
                       break;
            case 13 : printf("D");
                       break;
            case 14 : printf("E");
                       break;
            case 15 : printf("F");
                       break;
            default : printf("%d",y);
        }
        printf("\n");
        return 0;
    }
}
```

1,1 All

```
garvmehta991@omnitrix-1000: ~/25114035/Assignment6/Question25
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question25$ vim q25.c
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question25$ gcc q25.c -lm && ./a.out
Enter the decimal number : 568
238
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question25$ gcc q25.c -lm && ./a.out
Enter the decimal number : 24
18
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question25$ gcc q25.c -lm && ./a.out
Enter the decimal number : 78956
1346C
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question25$ gcc q25.c -lm && ./a.out
Enter the decimal number : 36548
8EC4
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question25$ gcc q25.c -lm && ./a.out
Enter the decimal number : 7869
1EBD
garvmehta991@omnitrix-1000:~/25114035/Assignment6/Question25$
```