Name : Antarin Ghosal Roll No. : 2106096

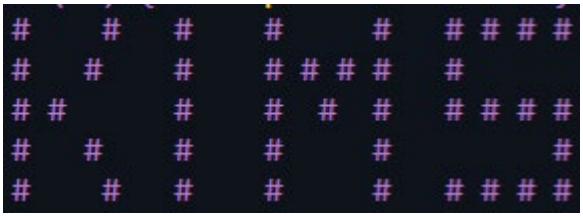
Assignment 1:

La 1.1

```c
/*Author : Antarin Ghosal
Program : WAP to display KIMS.
*/


#include <stdio.h>
int main()
{
    printf( "#    #   #    #     #   # # # #\n"
            "#   #    #    # # # #   #      \n"
            "# #      #    #  #  #   # # # #\n"
            "#   #    #    #     #         #\n"
            "#    #   #    #     #   # # # #\n");

    return 0;
}
```



La 1.2

```c
/*Author : Antarin Ghosal
Program : WAP to display a message.
*/

#include <stdio.h>
int main()
{
    printf( "If The End Is Good,\n Then It Is Good, \nWhatever Be The Means.");

    return 0;
}
```

```
If The End Is Good,
 Then It Is Good,
Whatever Be The Means.
```

La 1.3

```c
/*Author : Antarin Ghosal
Program : WAP to display BIO-DATA.
*/


#include <stdio.h>
int main()
{
    printf(" Name : Antarin Ghosal \n Regd.no : 2106096 \n Branch : IT \n JEE rank : 
372823 \n Gender : Male \n Phone no. : 12345678 \n Address : xyz street \n");

    return 0;

}
```

```
Name : Antarin Ghosal
Regd.no : 2106096
Branch : IT
JEE rank : 372823
Gender : Male
Phone no. : 12345678
Address : xyz street
```

Assignment 2:

La 2.1

```c
/*Author : Antarin Ghosal
Program : WAP to subtract a number from another number and display the result.
*/

#include <stdio.h>
int main()
{
    double num1,num2,sub;
```

```
    printf("Enter the 1st Number : ");
    scanf("%lf",&num1);

    printf("Enter the 2nd Number : ");
    scanf("%lf",&num2);

    sub=num1-num2;    //This Formula subtracts the 2 numbers

    printf("The Subtractions of the given numbers %.2lf & %.2lf is :
%.2lf",num1,num2,sub);

    return 0;
}
```

```
Enter the 1st Number : 10
Enter the 1st Number : 20
The Subtractions of the given numbers 10.00 & 20.00 is : -10.00
```

```
Enter the 1st Number : 70
Enter the 1st Number : 30
The Subtractions of the given numbers 70.00 & 30.00 is : 40.00
```

La 2.2

```
/*Author : Antarin Ghosal
Program : WAP to convert the temprature from celsius to Fahrenheit scale.
*/

#include <stdio.h>
int main()
{
    double tc,tf;

    printf("Enter the Celsius temperature : ");
    scanf("%lf",&tc);

    tf = (tc*1.8)+32;  //this is the formula for converting the celsius to Fahrenheit.

    printf("The Temperature in Fahrenheit is %.2lf",tf);

    return 0;
}
```

```
Enter the Celsius temperature : 100
The Temperature in Fahrenheit is 212.00
```

```
Enter the Celsius temperature : 273
The Temperature in Fahrenheit is 523.40
```

La 2.3

```c
/*Author : Antarin Ghosal
Program : WAP to Calculate perimeter of circle.
*/



#include <stdio.h>
int main()
{
    double r,per;

    printf("Enter the value of Radius : ");
    scanf("%lf",&r);               //This takes the input as the value of radius and
stores it in tthe location of 'r'.

    per = 2*3.14159*r;            //This formula finds the perimeter for the given value
of radius.

    printf("The Area for the given radius %.2lf of circle is : %.3lf",r,per);

    return 0;
}
```

```
Enter the value of Radius : 2
The Area for the given radius 2.00 of circle is : 12.566
```

```
Enter the value of Radius : 5
The Area for the given radius 5.00 of circle is : 31.416
```

La 2.4

```c
/*Author : Antarin Ghosal
Program : WAP to Calculate area of Triangle.
*/



#include <stdio.h>
#include <math.h>
int main()
{
    double a,b,c,area,s;

    printf("Enter the value of 1st side of triangle : ");
    scanf("%lf",&a);
```

```
    printf("Enter the value of 2nd side of triangle : ");
    scanf("%lf",&b);

    printf("Enter the value of 3rd side of traingle : ");
    scanf("%lf",&c);

    s= ((a+b+c)/2);
    area = (sqrt((s*(s-a)*(s-b)*(s-c)))); //this is the formula to calculate the area of
triangle.

    printf("The given values for Triangle are %.3lf, %.3lf & %.3lf \n",a,b,c);
    printf("The Area for the given values are : %.3lf \n",area);

    return 0;
}
```

```
Enter the value of 1st side of triangle : 20
Enter the value of 2nd side of triangle : 20
Enter the value of 3rd side of traingle : 20
The given values for Triangle are 20.000, 20.000 & 20.000
The Area for the given values are : 173.205
```

```
Enter the value of 1st side of triangle : 30
Enter the value of 2nd side of triangle : 30
Enter the value of 3rd side of traingle : 30
The given values for Triangle are 30.000, 30.000 & 30.000
The Area for the given values are : 389.711
```

La 2.5

```
/*Author : Antarin Ghosal
Program : WAP to swap two integer numbers without using third variable*/


#include<stdio.h>

int main(){
    int a,b;

    printf("Enter the numbers to be swaped : ");
    scanf("%d%d",&a,&b);

    a = a+b;
    b = a-b;        //Numbers are swaped here.
    a = a-b;

    printf("The swaped numbers are : %d & %d",a,b);

    return 0;
}
```

```
Enter the numbers to be swaped : 10
20
The swaped numbers are : 20 & 10
```

```
Enter the numbers to be swaped : 40 20
The swaped numbers are : 20 & 40
```

La 2.6

```c
/*Author : Antarin Ghosal
Program : WAP to convert a quantity in meter entered through keyboard into its equivalent
kilometer and meter
*/


#include<stdio.h>

int main(){

    int Em,Okm,Om;
    printf("Enter the value in meters : ");
    scanf("%d",&Em);

    Okm = Em / 1000;    //This converts to Km.
    Om = Em % 1000;     //This calculates the remaining distance in meters.

    printf("%d meters = %d Km and %d meter.",Em,Okm,Om);

    return 0;
}
```

```
Enter the value in meters : 1432
1432 meters = 1 Km and 432 meter.
```

```
Enter the value in meters : 35823
35823 meters = 35 Km and 823 meter.
```

La 2.7

```c
/*Author : Antarin Ghosal
Program : WAP to find the average mark of 5 subjects of a student and find the percentage.
*/

#include<stdio.h>
```

```c
int main(){

    int marks=0,avg=0;

    // the following part will take input from user serially
    // and add the sum in the variable "avg".
    for (int i=1;i<=5 && marks<=100;i++){
        printf("Enter Grade %d : ",i);
        scanf("%d",&marks);
        avg += marks;
    }

    //as we need the avarage we need to divide the added marks
    // by number of subjects, i.e. 5 for this case.
    printf("The average of all given marks is : %d",avg/5);

    return 0;
}
```

```
Enter Grade 1 : 10
Enter Grade 2 : 20
Enter Grade 3 : 30
Enter Grade 4 : 40
Enter Grade 5 : 50
The average of all given marks is : 30
```

```
Enter Grade 1 : 40
Enter Grade 2 : 40
Enter Grade 3 : 20
Enter Grade 4 : 90
Enter Grade 5 : 80
The average of all given marks is : 54
```

La 2.8

```c
/*Author : Antarin Ghosal
Program :WAP swap the contents of two variables by using a single statement for swap in
C.*/


#include<stdio.h>

int main(){

    int a,b;

    printf("Enter the numbers to be swaped : ");
    scanf("%d %d",&a,&b);
```

```
    a = a+b , b = a-b , a = a-b;    //here the numbers are swaped.

    printf("The swaped numbers are : %d & %d",a,b);
    return 0;
}
```

```
Enter the numbers to be swaped : 20
30
The swaped numbers are : 30 & 20
```

```
Enter the numbers to be swaped : 55
30
The swaped numbers are : 30 & 55
```

La 2.9

```
/*Author : Antarin Ghosal
Program : WAP to add two times in hour, minitue & second format entered through the
keyboard in the format hh:mm:ss*/


#include<stdio.h>

int main(){

    int t1hr,t1min,t1sec,t2hr,t2min,t2sec,day = 0;
    printf("Enter the Time in the format hh:mm:ss\n \n");
    printf("Time 1 = ");
    scanf("%d %d %d", &t1hr, &t1min, &t1sec);

    printf("Time 2 = ");
    scanf("%d %d %d", &t2hr, &t2min, &t2sec);

    //This if else block calculates the seconds
    if (0 < t1sec+t2sec && t1sec+t2sec < 60 ){
            t1sec = t1sec+t2sec;
    }
    else if (t1sec+t2sec > 60)
    {
        t1sec = t1sec+t2sec-60;
        t1min=t1min+1;
    }

    //This if else block calculates the minutes.
    if (0 < t1min+t2min && t1min+t2min < 60 ){
            t1min = t1min+t2min;
    }
    else if (t1min+t2min > 60)
```

```
    {
        t1min = t1min+t2min-60;
        t1hr=t1hr+1;
    }

    //This if else block calculates the hours and day.
    if (0 < t1hr+t2hr && t1hr+t2hr < 24 ){
            t1hr = t1hr+t2hr;
    }
    else if (t1hr+t2hr > 24)
    {
        t1hr = t1hr+t2hr-24;
        day=day+1;
    }

    printf("The added Time is : %dday %d:%d:%d",day,t1hr,t1min,t1sec);

    return 0;
}
```

```
Time 1 = 20 40 59
Time 2 = 1 35 20
The added Time is : 0day 22:16:19
```

```
Time 1 = 23 59 59
Time 2 = 4 48 59
The added Time is : 1day 4:48:58
```

Assignment 3:

La 3.1

```
/*Author : Antarin Ghosal
Program : WAP to input any two integers distinct and display the greater of two
integers.*/


#include<stdio.h>

int main(){
    int a,b,max;

    printf("Enter the 1st number : ");
    scanf("%d",&a);
    printf("Enter the 2nd number : ");
```

```
    scanf("%d",&b);

    max=a;
    if (b>max)
        max = b;
    if (a==b){
        printf("\nEntered values are same");
        return 0;
    }

    printf("%d is maximum",max);
    return 0;
}
```

```
Enter the 1st number : 10
Enter the 2nd number : 20
20 is maximum
```

```
Enter the 1st number : 22
Enter the 2nd number : 80
80 is maximum
```

La 3.2

```
/*Author : Antarin Ghosal
Program : WAP to input any three integers distinct and display the greater of three
integers.*/


#include<stdio.h>

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

    printf("Enter the 1st number : ");
    scanf("%d",&a);
    printf("Enter the 2nd number : ");
    scanf("%d",&b);
    printf("Enter the 3rd number : ");
    scanf("%d",&c);

    max = a ;

    if (max<b)
        max = b;
    if (max<c)
        max = c;

    printf("%d is maximum",max);

    return 0;
```

```
}
```

```
Enter the 1st number : 20
Enter the 2nd number : 10
Enter the 3rd number : 40
40 is maximum
```

```
Enter the 1st number : 32
Enter the 2nd number : 596
Enter the 3rd number : 64
596 is maximum
```

La 3.3

```c
/*Author : Antarin Ghosal
Program : WAP to test whether a number entered through keyboard is ODD or EVEN.*/


#include<stdio.h>

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

    temp=n%2;

    if (temp==1)
        printf("The Given number %d is Odd",n);
    else
        printf("The Given number %d is Even",n);

    return 0;
}
```

```
Enter a number : 2
The Given number 2 is Even
```

```
Enter a number : 3
The Given number 3 is Odd
```

La 3.4

```c
/*Author : Antarin Ghosal
```

```c
/*Program : WAP to read an alphabet from from the user and convert it into lowercase if the
entered alphabet is in uppercase,
otherwise display an appropriate message.*/


#include<stdio.h>

int main(){
    char character;
    printf("Enter the character : ");
    scanf("%c",&character);

    if (character>='a' && character<='z'){
        character= character - 32;
        printf("\nThe Upper case character for the given input is : %c \n",character);
    }
    else printf("\nEnter a Lower case character!!\n");


    return 0;
}
```

```
Enter the character : a

The Upper case character for the given input is : A
```

```
Enter the character : e

The Upper case character for the given input is : E
```

La 3.5

```c
/*Author : Antarin Ghosal
Program : WAP to display a calculator.*/


#include<stdio.h>

int main(){
    float a,b,res=0;
    char op;
    printf("\n-----------------------Calculator------------------------------\n");
    printf("Enter the operator(+,-,*,/) : ");
    scanf("%c",&op);

    printf("Enter the 1st number : ");
    scanf("%f",&a);
    printf("Enter the 2nd number : ");
```

```
    scanf("%f",&b);

    if (op == '+')
        res = a+b;
    else if (op == '-'){
        if (a>b)
            res = a-b;
        else
            res = b-a;
    }
    else if (op == '*')
        res = a*b;
    else if (op == '/')
        res = a/b;
    else{
        printf("\nThe entered operator or the input value is incorrect.\n");
        return 0;
    }

    printf("The entered operator was %c and the calculated value is %.2f\n",op,res);

    return 0;
}
```

```
------------------------Calculator--------------------------------
Enter the operator(+,-,*,/) : +
Enter the 1st number : 20
Enter the 2nd number : 30
The entered operator was + and the calculated value is 50.00
```

```
 ------------------------Calculator--------------------------------
 Enter the operator(+,-,*,/) : *
 Enter the 1st number : 03
 Enter the 2nd number : 2
 The entered operator was * and the calculated value is 6.00
```

La 3.6

```
/*Author : Antarin Ghosal
Program : WAP to kiit grading system.*/


#include<stdio.h>

int main(){
    int no_subs,avg=0,marks;
```

```c
    char grade;

    printf("Enter the number of subjects : ");
    scanf("%d",&no_subs);

    for (int i =1 ; i <= no_subs; i++){
        printf("Enter the marks of %d subject : ",i);
        scanf("%d",&marks);
        avg+=marks;
    }
    avg/=no_subs;
    //avg has the total average grade

    if (avg < 100 && avg > 90)
        grade = 'O';
    else if (avg < 89 && avg > 80)
        grade = 'E';
    else if (avg < 79 && avg > 70)
        grade = 'A';
    else if (avg < 69 && avg > 60)
        grade = 'B';
    else if (avg < 59 && avg > 50)
        grade = 'C';
    else if (avg < 49 && avg > 40)
        grade = 'D';
    else{
        printf("\nYou got an \'F\', Better luck next time.\n");
        return 0;
    }

    printf("\nCongratulation!! You got \'%c\' \n",grade);
    return 0;
}
```

```
Enter the number of subjects : 5
Enter the marks of 1 subject : 80
Enter the marks of 2 subject : 90
Enter the marks of 3 subject : 86
Enter the marks of 4 subject : 84
Enter the marks of 5 subject : 89

Congratulation!! You got 'E'
```

```
Enter the number of subjects : 5
Enter the marks of 1 subject : 10
Enter the marks of 2 subject : 10
Enter the marks of 3 subject : 20
Enter the marks of 4 subject : 30
Enter the marks of 5 subject : 10

You got an 'F', Better luck next time.
```

La 3.7

```c
/*Author : Antarin Ghosal
Program : WAP to display max between 2 numbers using switch case.*/


#include<stdio.h>

int main(){
    int a,b,c;
    printf("Enter 1st number : ");
    scanf("%d",&a);
    printf("Enter 2nd number : ");
    scanf("%d",&b);

    c=b>a;
    switch (c){
        case 1:
            printf("\n%d is greater than %d \n",b,a);
            break;
        case 0:
            printf("\n%d is greater than %d \n",a,b);
            break;
        default:
            break;
    }

    return 0;
}
```

```
Enter 1st number : 40
Enter 2nd number : 20

40 is greater than 20
```

```
Enter 1st number : 59
Enter 2nd number : 90

90 is greater than 59
```

Ha 3.1

```c
/*Author : Antarin Ghosal
Program : WAP to cheak weather the entered value is digit, character or special
character*/


#include<stdio.h>

int main(){
    char a;
    printf("enter value : ");
    scanf("%c",&a);

    if (a<32)
        printf("Null input");
    else if ((a>=32 && a<=47) || (a>=58&&a<=64) || (a>=91&&a<=96) || (a>=124&&a<=127))
        printf("\nThe entered value is a Special character.\n");
    else if ((a>='a'&&a<='z')||(a>='A'&&a<='Z'))
        printf("\nThe entered value is an English character.\n");
    else if (a>=48&&a<=57)
        printf("\nThe entered value is an Integer.\n");
    else printf("\nERROR !! Try entering a single character.\n");

    return 0;
}
```

```
enter value : e

The entered value is an English character.
```

```
enter value : '

The entered value is a Special character.
```

Ha 3.2

```c
/*Author : Antarin Ghosal
Program : WAP to operate on 2 numbers.*/
```

```c
#include<stdio.h>

int main(){
    float a,b,res;
    char op='a';
    printf("Enter the operator (+,-,*,/,etc) : ");
    scanf("%c",&op);
    printf("Enter the 1st number : ");
    scanf("%f",&a);
    printf("Enter the 2nd number : ");
    scanf("%f",&b);

    switch(op)
    {
        case '+':
        {
        res=a+b;
        break;
        }
        case '-':
        {
            res=a-b;
            break;
        }
        case '*':
        {
            res=a*b;
            break;
        }
        case '/':
        {
            res=a/b;
            break;
        }
        case '%':
        {
            res=(int)a%(int)b;
            break;
        }
        default:
        break;
    }

    printf("\nThe result is : %.2f \n",res);

    return 0;
}
```

```
Enter the operator (+,-,*,/,etc) : -
Enter the 1st number : 40
Enter the 2nd number : 20

The result is : 20.00
```

```
Enter the operator (+,-,*,/,etc) : /
Enter the 1st number : 40
Enter the 2nd number : 20

The result is : 2.00
```

Ha 3.3

```c
/*Author : Antarin Ghosal
Program : WAP to find roots of quadratic equation.*/


#include<stdio.h>
#include<math.h>

int main()
{
    float a, b, c;
    float root1, root2, imaginary;
    float discriminant;

    printf("Enter values of a, b, c of quadratic equation (aX^2 + bX + c): ");
    scanf("%f%f%f", &a, &b, &c);

    discriminant = (b * b) - (4 * a * c);

    switch(discriminant > 0)
    {
        case 1:
            root1 = (-b + sqrt(discriminant)) / (2 * a);
            root2 = (-b - sqrt(discriminant)) / (2 * a);

            printf("\nTwo distinct and real roots exists: %.2f and %.2f\n",root1, root2);
            break;

        case 0:
            switch(discriminant < 0)
            {
                case 1:
                    root1 = root2 = -b / (2 * a);
                    imaginary = sqrt(-discriminant) / (2 * a);
```

```
                    printf("\nTwo distinct complex roots exists: %.2f + i%.2f and %.2f -
i%.2f\n",root1, imaginary, root2, imaginary);
                    break;

                case 0:
                    root1 = root2 = -b / (2 * a);

                    printf("\nTwo equal and real roots exists: %.2f and %.2f\n", root1,
root2);

                    break;
            }
    }

    return 0;
}
```

```
Enter values of a, b, c of quadratic equation (aX^2 + bX + c): -1 -15 2

Two distinct and real roots exists: -15.13 and 0.13
```

```
Enter values of a, b, c of quadratic equation (aX^2 + bX + c): 1
2
3

Two distinct complex roots exists: -1.00 + i1.41 and -1.00 - i1.41
```

Ha 3.4

```
/*Author : Antarin Ghosal
Program : WAP to check whather the number is odd or even using switch.*/


#include<stdio.h>

int main(){
    int a,temp;

    printf("Enter a number : ");
    scanf("%d",&a);

    temp=a%2;
    switch(temp)
    {
        case 0:
            printf("\nThe entered number is EVEN\n");
            break;
```

```
        case 1:
            printf("\nThe entered number is ODD\n");
            break;
    }

    return 0;
}
```

```
Enter a number : 2

The entered number is EVEN
```

```
Enter a number : 3

The entered number is ODD
```

Ha 3.5

```
/*Author : Antarin Ghosal
Program : WAP to display KIMS.*/


#include<stdio.h>

int main(){
    int s1,s2,s3;
    printf("Enter the sides : ");
    scanf("%d%d%d",&s1,&s2,&s3);

    if ((s1 == s2) && (s2==s3))
        printf("\nThis is an Equilateral Triangle.\n");
    else if ((s1==s2)||(s2==s3)||(s1==s3))
        printf("\nThis is an Isosceles Triangle\n");
    else printf("\nThis is a Scalene Triangle.\n");

    return 0;
}
```

```
Enter the sides : 10 20 30

This is a Scalene Triangle.
```

```
Enter the sides : 10 10 20

This is an Isosceles Triangle
```

Ha 3.6

```c
/*Author : Antarin Ghosal
Program : WAP to find profit or loss*/


#include<stdio.h>

int main(){
    int sp,cp,profit,loss;
    printf("Enter selling price : ");
    scanf("%d",&sp);
    printf("Enter cost price : ");
    scanf("%d",&cp);

    if (sp>cp){
        profit=sp-cp;
        printf("\nProfit : %d\n",profit);
    }
    else {
        loss=cp-sp;
        printf("\nLoss : %d\n",loss);
    }


    return 0;
}
```

```
Enter selling price : 100
Enter cost price : 20

Profit : 80
```

```
Enter selling price : 60
Enter cost price : 80

Loss : 20
```

Assignment 4:

La 4.1

```c
/*Author : Antarin Ghosal
Program : WAP to display your name 5 times using while loop.*/
```

```c
#include<stdio.h>

int main(){
    int i=0;
    while(i<5){
        printf("Antarin ghosal\n");
        i++;
    }
    return 0;
}
```

```
Antarin ghosal
Antarin ghosal
Antarin ghosal
Antarin ghosal
Antarin ghosal
```

La 4.2

```c
/*Author : Antarin Ghosal
Program : WAP to display your name as per given number as input.*/


#include<stdio.h>

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

    for (i=0;i<n;i++){
        printf("\nAntarin Ghosal\n");
    }

    return 0;
}
```

```
Enter a number :3

Antarin Ghosal

Antarin Ghosal

Antarin Ghosal
```

```
Enter a number :1

Antarin Ghosal
```

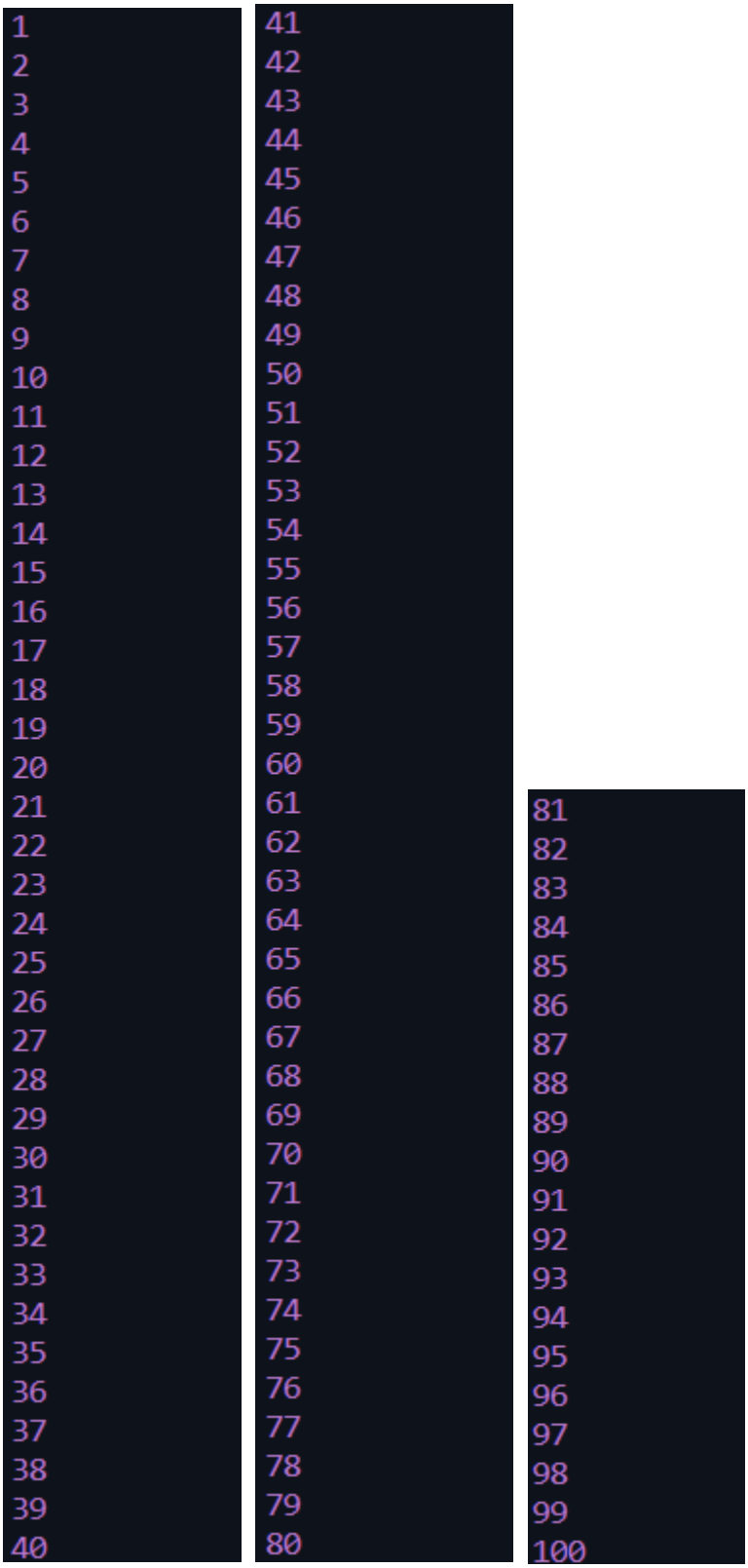
La 4.3

```c
/*Author : Antarin Ghosal
Program : WAP to display series of numbers.*/


#include<stdio.h>

int main(){
    for (int i=1;i<=100;i++){
        printf("\n %d \n",i);
    }

    return 0;
}
```



La 4.4

```
/*Author : Antarin Ghosal
Program : WAP to display as 1 3 7 15 31........n*/


#include<stdio.h>
```

```c
int main(){
    int n,i=0,temp=0,preterm=0;
    printf("Enter a number : ");
    scanf("%d",&n);

    while(temp<n){
        i=preterm;
        temp=(2*i)+1;
        printf("\n %d \n",temp);
        preterm=temp;
        i++;
    }

    return 0;
}
```

```
Enter a number : 13

 1

 3

 7

 15
```

```
Enter a number : 19

 1

 3

 7

 15

 31
```

La 4.5

```c
/*Author : Antarin Ghosal
Program : WAP to display a series of form 1 1 2 3 5 8 13.........n .*/


#include<stdio.h>
```

```c
int main(){
    int n,i,d1=1,d2=1,temp;
    printf("Enter a number : ");
    scanf("%d",&n);
    for (d1=1;d1<n;i++){
        printf("\n %d \n",d1);
        temp=d1+d2;
        d1=d2;
        d2=temp;
    }
    printf("");

    return 0;
}
```

```
Enter a number : 10

 1

 1

 2

 3

 5

 8
```

```
Enter a number : 3

 1

 1

 2
```

La 4.6

```c
/*Author : Antarin Ghosal
Program : WAP to display series of form 3 5 7 11 13 17.......n .*/


#include<stdio.h>

int main(){
    int n,i,t;
```

```
    printf("Enter a number : ");
    scanf("%d",&n);

    printf("\n 3 \n\n 5 \n");

    for (i=1;i<=n;i++){
        t=(2*i)+1
        if ((t%3!=0)&&(t%5!=0)){
            printf("\n %d \n",t);
        }
    }
    return 0;
}
```

```
Enter a number : 12

 3

 5

 7

 11

 13

 17

 19

 23
```

```
Enter a number : 4

 3

 5

 7
```

La 4.7

```
/*Author : Antarin Ghosal
Program : WAP to display all odd and even numbers.*/


#include<stdio.h>

int main(){
    int stn,endn,i;

    printf("Enter the range : ");
    scanf("%d%d",&stn,&endn);

    printf("\nAll even numbers are : \n");
```

```
    for (i=stn;i<endn;i++){
        if(i%2==0){
            printf("%d\n",i);
        }
    }

    printf("\nAll odd numbers are : \n");

    for (i=stn;i<endn;i++){
        if(i%2==1){
            printf("%d\n",i);
        }
    }


    return 0;
}
```

```
Enter the range : 10
20

All even numbers are :
10
12
14
16
18

All odd numbers are :
11
13
15
17
19
```

```
Enter the range : 100
110

All even numbers are :
100
102
104
106
108

All odd numbers are :
101
103
105
107
109
```

La 4.8

```
/*Author : Antarin Ghosal
Program : WAP to display reverse of number entered through keyboard.*/


#include<stdio.h>

int main(){
    int n,temp,rev=0;
```

```
    printf("Enter a number : ");
    scanf("%d",&n);

    while(n!=0){
        temp=n%10;
        rev=rev*10+temp;
        n/=10;
    }

    printf("%d",rev);

    return 0;
}
```

```
Enter a number : 12871
17821
```

```
Enter a number : 24734
43742
```

La 4.9

```
/*Author: Antarin ghosal
Date: 29.03.2022
Program:  WAP to check whether an integer number is a Armstrong number or not!.
*/

#include<stdio.h>

int main()
{
int n,r,sum=0,temp;
printf("enter the number=");
scanf("%d",&n);
temp=n;
while(n>0)
{
r=n%10;
sum=sum+(r*r*r);
n=n/10;
}
if(temp==sum)
printf("armstrong  number ");
else
printf("not armstrong number");
return 0;
}
```

```
enter the number=153
armstrong  number
```

```
enter the number=111
not armstrong number
```

La 4.10

```c
/*Author : Antarin Ghosal
Program : WAP to print the following pattern.
A
B A
C B A
D C B A
E D C B A
*/


#include<stdio.h>

int main(){
    int num,i,j,temp=0;
    char ch='A';
    printf("Enter the number of Rows : ");
    scanf("%d",&num);

    for(i=0;i<=num;i++){
    printf("\n");
        for(j=0;j<=i;j++){
            temp=i;
            temp-=j;
            printf("%c ",ch+temp);
        }
    }

    return 0;
}
```

```
Enter the number of Rows : 5

A
B A
C B A
D C B A
E D C B A
F E D C B A
```

```
Enter the number of Rows : 3

A
B A
C B A
D C B A
```

La 4.11

```c
/*Author : Antarin Ghosal
Program : WAP to display the following pattern
1
2 1
1 2 3
4 3 2 1
1 2 3 4 5
*/


#include <stdio.h>

int main()
{
    int i, j, N;

    printf("Enter rows: ");
    scanf("%d", &N);

    for(i=1; i<=N; i++)
    {
        if(i & 1)
        {

            for(j=1; j<=i; j++)
            {
                printf("%d", j);
            }
        }
        else
        {

            for(j=i; j>=1; j--)
            {
                printf("%d", j);
            }
        }

        printf("\n");
    }

    return 0;
}
```

```
Enter rows: 10
1
21
123
4321
12345
654321
1234567
87654321
123456789
10987654321
```

```
Enter rows: 5
1
21
123
4321
12345
```

Ha 4.1

```c
/*Author : Antarin Ghosal
Program : WAP to display if a number is strong number or not.*/


#include<stdio.h>
int main()
{
    long int num,fac=1,sum=0;
    int i,digit,j;
    printf("Enter Number");
    scanf("%d",&num);
    for(i=1;num>0;i++)
    {
        digit=num%10;
        num/=10;
        for(j=1;j<=digit;j++)
        {
            fac=fac*j;
            sum=sum+fac;
        }
        fac=1;

    }
    if (sum==num)
    {
        printf("The number is a strong number");
    }
    else
    {
        printf("The number is not a strong number");
    }
    return 0;
}
```

```
Enter number: 145
145 is a strong number.
```

```
Enter number: 10
10 is not a strong number.
```

Ha 4.3

```c
/*Author : Antarin Ghosal
Program : WAP to form reverse pyramid of numbers for a given number. Ex. for
number 4
    1 2 3 4 3 2 1
      1 2 3 2 1
        1 2 1
          1.
*/


#include <stdio.h>
int main()
{
    int i,j,rows,space=0;
    printf("Enter the number of rows: ");
    scanf("%d",&rows);
    for(i=rows;i>=1;i--)
    {
        for(j=1;j<=space;j++)
        printf(" ");
            for(j=1;j<=i;j++)
        printf("%d ",j);
            for(j=i-1;j>=1;j--)
        printf("%d ",j);
        printf("\n");
        space++;
        space++;
    }
    return 0;
}
```

```
Enter the number of rows: 5
1 2 3 4 5 4 3 2 1
  1 2 3 4 3 2 1
    1 2 3 2 1
      1 2 1
        1
```

```
Enter the number of rows: 3
1 2 3 2 1
  1 2 1
    1
```

Ha 4.4

```c
/*Author : Antarin Ghosal
Program : WAP to print the following pattern for n rows. Ex. for n=6 rows
```

```
0
1 0
0 1 0
1 0 1 0
0 1 0 1 0
1 0 1 0 1 0*/


#include <stdio.h>

int main()
{
    int i,j,n,p,q;
    printf("Input number of rows : ");
    scanf("%d",&n);
    for(i=1;i<=n;i++)
    {
        if(i%2==0)
        {
            p=1;q=0;
        }
        else
        {
            p=0;q=1;
        }
        for(j=1;j<=i;j++){
            if(j%2==1)
                printf("%d ",p);
            else
                printf("%d ",q);
        }
        printf("\n");
    }
}
```

```
Input number of rows : 5
0
1 0
0 1 0
1 0 1 0
0 1 0 1 0
```

```
Input number of rows : 3
0
1 0
0 1 0
```

Ha 4.5

```
/*Author : Antarin Ghosal
Program : WAP to generate the pascal triangle pyramid of numbers for a given
number.
Ex. for number 4
```

```
        1
       1 1
      1 2 1
     1 3 3 1
    1 4 6 4 1.
*/


#include<stdio.h>

int main()
{
    int rows, n = 1, p, i, j;
    printf("\nEnter the number of rows :");
    scanf("%d",&rows);
    printf("\n");

    for(i=0; i<rows; i++)
    {
        for(p=1; p <= rows-i; p++){
            printf("  ");
        }
        for(j=0; j <= i; j++)
        {
        if (j==0 || i==0)
            n = 1;
        else
            n = n*(i-j+1)/j;
            printf("%4d", n);
        }
            printf("\n\n");
    }

    return 0;
}
```

```
Enter the number of rows :5

            1

          1   1

        1   2   1

      1   3   3   1

    1   4   6   4   1
```

```
Enter the number of rows :3

        1

      1   1

    1   2   1
```

Ha 4.7

```c
/*Author : Antarin Ghosal
Program : WAP to convert a decimal number into its equivalent binary number.*/


#include<stdio.h>

int main(){
    int n;
    long int bin = 0;
    int rem, i = 1;

    printf("Enter a decimal number : ");
    scanf("%d",&n);

    while (n!=0) {
    rem = n % 2;
    n /= 2;
    bin += rem * i;
    i *= 10;
    }
    printf("It's equivalent binary form is : %ld",bin);
}
```

```
Enter a decimal number : 45
It's equivalent binary form is : 101101
```

```
Enter a decimal number : 65
It's equivalent binary form is : 1000001
```

Extra 1

```c
/*Author : Antarin Ghosal
Program: WAP to find all factors of a number.
*/

#include <stdio.h>
int main() {
    int num, i;
    printf("Enter a positive integer: ");
    scanf("%d", &num);
    printf("Factors of %d are: ", num);
    for (i = 1; i <= num; ++i) {
        if (num % i == 0) {
            printf("%d ", i);
        }
```

```
    }
    return 0;
}
```

```
Enter a positive integer: 10
Factors of 10 are: 1 2 5 10
```

```
Enter a positive integer: 20
Factors of 20 are: 1 2 4 5 10 20
```

Extra 2

```
/*Author : Antarin Ghosal
Program: WAP to to find LCM of two numbers.\
*/

#include <stdio.h>
int main() {
    int n1, n2, max;
    printf("Enter two positive integers: ");
    scanf("%d %d", &n1, &n2);

     max = (n1 > n2) ? n1 : n2;

    while (1) {
        if (max % n1 == 0 && max % n2 == 0) {
            printf("The LCM of %d and %d is %d.", n1, n2, max);
            break;
        }
        ++max;
    }
    return 0;
}
```

```
Enter two positive integers: 10 20
The LCM of 10 and 20 is 20.
```

```
Enter two positive integers: 140 160
The LCM of 140 and 160 is 1120.
```

Extra 3

```
/*Author : Antarin Ghosal
Program: WAP to print all ASCII character with their values.
*/
```

```c
#include <stdio.h>
int main()
{
    char c;
    printf("Enter a character: ");
    scanf("%c", &c);
    printf("ASCII value of %c = %d", c, c);

    return 0;
}
```

```
Enter a character: a
ASCII value of a = 97
```

```
Enter a character: z
ASCII value of z = 122
```

Extra 4

```c
/*Author : Antarin Ghosal
Program: WAP to print all Armstrong numbers between 1 to n.
*/

#include <stdio.h>
#include <math.h>

int main()
{
    int num, lastDigit, digits, sum, i, end;

    printf("Enter upper limit: ");
    scanf("%d", &end);

    printf("Armstrong number between 1 to %d are: \n", end);

    for(i=1; i<=end; i++)
    {
        sum = 0;


        num = i;


        digits = (int) log10(num) + 1;

        while(num > 0)
        {
        lastDigit = num % 10;
        sum = sum + ceil(pow(lastDigit, digits));
        num = num / 10;
```

```
        }
        if(i == sum)
        {
        printf("%d, ", i);
        }

    }

    return 0;
}
```

```
Enter upper limit: 30
Armstrong number between 1 to 30 are:
1, 2, 3, 4, 5, 6, 7, 8, 9,
```

```
Enter upper limit: 10
Armstrong number between 1 to 10 are:
1, 2, 3, 4, 5, 6, 7, 8, 9,
```

Extra 5

```
/*Author : Antarin Ghosal
Program: WAP to print all Perfect numbers between 1 to n.
*/

#include <stdio.h>

int main()
{
    int i, j, start, end, sum;

    printf("Enter lower limit: ");
    scanf("%d", &start);
    printf("Enter upper limit: ");
    scanf("%d", &end);

    printf("All Perfect numbers between %d to %d:\n", start, end);


    for(i=start; i<=end; i++)
    {
        sum = 0;


        for(j=1; j<i; j++)
        {
            if(i % j == 0)
            {
                sum += j;
            }
        }
```

```
        if(sum == i)
        {
            printf("%d, ", i);
        }
    }

    return 0;
}
```

```
Enter lower limit: 1
Enter upper limit: 100
All Perfect numbers between 1 to 100:
6, 28,
```

```
Enter lower limit: 10
Enter upper limit: 60
All Perfect numbers between 10 to 60:
28,
```

Extra 6

```
/*Author : Antarin Ghosal
Program: WAP to print all Strong numbers between 1 to n.
*/

#include<stdio.h>
int main()
{
    int range1,range2,i,j;
    printf("Enter a range:");
    scanf("%d %d", &range1, &range2);

    printf("Strong numbers between %d and %d are: ",range1,range2);

    for(i=range1;i<=range2;i++)
    {
    int num2=i;
    int num1=i;
    int sum=0;
    int fact=1;

    while(num1!=0)
    {   fact=1;
        int rem=num1%10;
        num1=num1/10;
        for(j=1;j<=rem;j++)
        fact=fact*j;
        sum=sum+fact;
    }
```

```
    if(sum==num2)
    printf("%d ",i);
    }
    return 0;

}
```

```
Enter a range:1 100
Strong numbers between 1 and 100 are: 1 2
```

```
Enter a range:1 1000
Strong numbers between 1 and 1000 are: 1 2 145
```

Extra 7

```c
/*Author : Antarin Ghosal
Program: WAP to to find one's complement of a binary number.
*/

#include <stdio.h>
#include <string.h>

int main() {
    char binaryNumber[100], onesComplement[100];
    int counter, error=0, digitCount;

    printf("Enter a Binary Number\n");
    scanf("%s", binaryNumber);

    digitCount = strlen(binaryNumber);

    for(counter=0; counter < digitCount; counter++) {
        if(binaryNumber[counter]=='1') {
            onesComplement[counter] = '0';
        } else if(binaryNumber[counter]=='0') {
            onesComplement[counter] = '1';
        } else {
            printf("Error :( ");
            return 1;
        }
    }
    onesComplement[digitCount] = '\0';

    printf("Ones Complement : %s", onesComplement);

    return 0;
}
```

```
Enter a Binary Number
10010
Ones Complement : 01101
```

```
Enter a Binary Number
1100101
Ones Complement : 0011010
```

Extra 8

```c
/*Author : Antarin Ghosal
Program: WAP to find two's complement of a binary number.
*/


#include <stdio.h>
#include <string.h>

int main() {
    char binaryNumber[100], onesComplement[100], twosComplement[100];
    int counter, error=0, digitCount, carry = 1;

    printf("Enter a Binary Number\n");
    scanf("%s", binaryNumber);


    digitCount = strlen(binaryNumber);

    for(counter=0; counter < digitCount; counter++) {
        if(binaryNumber[counter]=='1') {
            onesComplement[counter] = '0';
        } else if(binaryNumber[counter]=='0') {
            onesComplement[counter] = '1';
        } else {
            printf("Error :( ");
            return 1;
        }
    }
    onesComplement[digitCount] = '\0';


    for(counter = digitCount-1; counter >= 0; counter--) {
        if(onesComplement[counter]=='1' && carry==1){
            twosComplement[counter] = '0';
        } else if(onesComplement[counter]=='0' && carry==1) {
            twosComplement[counter] = '1';
            carry = 0;
        } else {
            twosComplement[counter] = onesComplement[counter];
        }
    }
    twosComplement[digitCount] = '\0';

    printf("Two's Complement : %s", twosComplement);
```

```
    return 0;
}
```

```
Enter a Binary Number
10010
Two's Complement : 01110
```

```
Enter a Binary Number
1100101
Two's Complement : 0011011
```

Extra 9

```c
/*Author : Antarin Ghosal
Program: WAP to convert Binary to Octal number system.
*/

#include <stdio.h>

int main()
{
    long int binarynum, octalnum = 0, j = 1, remainder;

    printf("Enter the value for  binary number: ");
    scanf("%ld", &binarynum);
    while (binarynum != 0)
    {
        remainder = binarynum % 10;
        octalnum = octalnum + remainder * j;
        j = j * 2;
        binarynum = binarynum / 10;
    }
    printf("Equivalent octal value: %lo", octalnum);
    return 0;
}
```

```
Enter the value for  binary number: 10010
Equivalent octal value: 22
```

```
Enter the value for  binary number: 1110101
Equivalent octal value: 165
```

Extra 10

```c
/*Author : Antarin Ghosal
Program: WAP to convert Binary to Decimal number system.
*/

#include <stdio.h>

int main()
{
    int binary, decimal = 0, base = 1, remainder;

    printf("Enter the Binary Number = ");
    scanf("%d", &binary);

    int temp = binary;
    while(temp > 0)
    {
        remainder = temp % 10;
        decimal = decimal + remainder * base;
        temp = temp / 10;
        base = base * 2;
    }

    printf("The Decimal Value = %d\n", decimal);

    return 0;
}
```

```
Enter the Binary Number = 10010
The Decimal Value = 18
```

```
Enter the Binary Number = 11101
The Decimal Value = 29
```

Extra 11

```c
/*Author : Antarin Ghosal
Program: WAP to convert Binary to Hexadecimal number system.
*/

#include <stdio.h>

int main()
{
    long int binaryval, hexadecimalval = 0, i = 1, remainder;

    printf("Enter the binary number: ");
    scanf("%ld", &binaryval);
```

```
    while (binaryval != 0)
    {
        remainder = binaryval % 10;
        hexadecimalval = hexadecimalval + remainder * i;
        i = i * 2;
        binaryval = binaryval / 10;
    }
    printf("Equivalent hexadecimal value: %lX", hexadecimalval);
    return 0;
}
```

```
Enter the binary number: 10011
Equivalent hexadecimal value: 13
```

```
Enter the binary number: 101001
Equivalent hexadecimal value: 29
```

Extra 12

```
/*Author : Antarin Ghosal
Program: WAP to convert Octal to Binary number system.
*/

#include<stdio.h>
#include<math.h>
int main()
{
    int oct, dec=0, bin=0, i=0;

    printf("Enter Octal Number: ");
    scanf("%d",&oct);

    while(oct != 0)
    {
        dec += (oct%10) * (pow(8,i));
        oct /= 10;
        i++;
    }

    i=1;
    while(dec != 0)
    {
         bin += (dec%2) * i;
        dec /= 2;
         i *= 10;
    }
```

```
    printf("Binary Value=%d",bin);

    return 0;
}
```

```
Enter Octal Number: 65
Binary Value=110101
```

```
Enter Octal Number: 35
Binary Value=11101
```

Extra 13

```
/*Author : Antarin Ghosal
Program: WAP to convert Octal to Decimal number system.
*/

#include <stdio.h>
#include <math.h>

int main()
{

    long int octal, decimal = 0;
    int i = 0;

    printf("Enter any octal number: ");
    scanf("%ld", &octal);
    while (octal != 0)
    {
        decimal =  decimal +(octal % 10)* pow(8, i++);
        octal = octal / 10;
    }
    printf("Equivalent decimal value: %ld",decimal);
    return 0;
}
```

```
Enter any octal number: 65
Equivalent decimal value: 53
```

```
Enter any octal number: 35
Equivalent decimal value: 29
```

Extra 14

```
/*Author : Antarin Ghosal
```

```c
/*
Program: WAP to convert Octal to Hexadecimal number system.
*/

#include <stdio.h>
#include<string.h>
int main()
{
int octaltobinary[]={0,1,10,11,100,101,110,111};
char hexadecimal[10];
char hex[10];
long int binary=0;
int octal;
int rem=0;
int position=1;
int len=0;
int k=0;
    printf("Enter a octal number : ");
    scanf("%d",&octal);

while(octal!=0)
{
        rem=octal%10;
        binary=octaltobinary[rem]*position+binary;
        octal=octal/10;
        position=position*1000;
}

    while(binary > 0)
    {
        rem = binary % 10000;
        switch(rem)
        {
            case 0:
                strcat(hexadecimal, "0");
                break;
            case 1:
                strcat(hexadecimal, "1");
                break;
            case 10:
                strcat(hexadecimal, "2");
                break;
            case 11:
                strcat(hexadecimal, "3");
                break;
            case 100:
                strcat(hexadecimal, "4");
                break;
            case 101:
                strcat(hexadecimal, "5");
                break;
            case 110:
                strcat(hexadecimal, "6");
                break;
            case 111:
```

```
                strcat(hexadecimal, "7");
                break;
            case 1000:
                strcat(hexadecimal, "8");
                break;
            case 1001:
                strcat(hexadecimal, "9");
                break;
            case 1010:
                strcat(hexadecimal, "A");
                break;
            case 1011:
                strcat(hexadecimal, "B");
                break;
            case 1100:
                strcat(hexadecimal, "C");
                break;
            case 1101:
                strcat(hexadecimal, "D");
                break;
            case 1110:
                strcat(hexadecimal, "E");
                break;
            case 1111:
                strcat(hexadecimal, "F");
            break;
        }
len=len+1;
        binary /= 10000;
    }
    for(int i=len-1;i>=0;i--)
{
    hex[k]=hexadecimal[i];
    k++;
}
hex[len]='\0';
printf("\nThe hexadecimal number is : ");
for(int i=0; hex[i]!='\0';i++)
{
    printf("%c",hex[i]);
}
printf("\n");

    return 0;
}
```

```
Enter a octal number : 65

The hexadecimal number is : 35
```

```
Enter a octal number : 11

The hexadecimal number is : 9
```

Extra 15

```c
/*Author : Antarin Ghosal
Program: WAP to convert Decimal to Binary number system.
*/

#include <stdio.h>
int main()
{
    int arr[10], num, i, j;
    printf("Please Give a Number to Convert in Binary:  ");
    scanf("%d", &num);
    printf("Binary Number of %d is =  ",num);
    for(i = 0; num > 0; i++)
    {
        arr[i] = num % 2;
        num = num / 2;
    }
    for(j = i - 1; j >= 0; j--)  {
        printf(" %d ", arr[j]);
    }
    printf("\n");
    return 0;
}
```

```
Please Give a Number to Convert in Binary:  65
Binary Number of 65 is =   1  0  0  0  0  0  1
```

```
Please Give a Number to Convert in Binary:  35
Binary Number of 35 is =   1  0  0  0  1  1
```

Extra 16

```c
/*Author : Antarin Ghosal
Program: WAP to convert Decimal to Octal number system.
*/

#include <stdio.h>

int main()
{
    long decimalnum, remainder, quotient;
    int octalNumber[100], i = 1, j;

    printf("Enter the decimal number: ");
```

```
    scanf("%ld", &decimalnum);
    quotient = decimalnum;
    while (quotient != 0)
    {
        octalNumber[i++] = quotient % 8;
        quotient = quotient / 8;
    }
    printf("Equivalent octal value of decimal no %ld : ", decimalnum);
    for (j = i - 1; j > 0; j--)
        printf("%d", octalNumber[j]);

    printf("\n");
    return 0;
}
```

```
Enter the decimal number: 65
Equivalent octal value of decimal no 65 : 101
```

```
Enter the decimal number: 35
Equivalent octal value of decimal no 35 : 43
```

Extra 17

```
/*Author : Antarin Ghosal
Program: WAP to convert Decimal to Hexadecimal number system.
*/

#include <stdio.h>

int main()
{
    long decimalnum, quotient, remainder;
    int i, j = 0;
    char hexadecimalnum[100];

    printf("Enter decimal number: ");
    scanf("%ld", &decimalnum);

    quotient = decimalnum;

    while (quotient != 0)
    {
        remainder = quotient % 16;
        if (remainder < 10)
            hexadecimalnum[j++] = 48 + remainder;
        else
            hexadecimalnum[j++] = 55 + remainder;
```

```
        quotient = quotient / 16;
    }

    for (i = j; i >= 0; i--)
            printf("%c", hexadecimalnum[i]);

    printf("\n");

    return 0;
}
```

```
Enter decimal number: 65
41
```

```
Enter decimal number: 35
23
```

Extra 18

```
/*Author : Antarin Ghosal
Program: WAP to convert Hexadecimal to Binary number system
*/

#include <stdio.h>
#include <string.h>
#include <math.h>

int main()
{
    char hex[17];
    long long decimal, place;
    int i = 0, val, len;

    decimal = 0;
    place = 1;

    printf("Enter any hexadecimal number: ");
    gets(hex);

    len = strlen(hex);
    len--;

    for(i=0; hex[i]!='\0'; i++)
    {
        if(hex[i]>='0' && hex[i]<='9')
        {
            val = hex[i] - 48;
        }
        else if(hex[i]>='a' && hex[i]<='f')
        {
```

```
            val = hex[i] - 97 + 10;
        }
        else if(hex[i]>='A' && hex[i]<='F')
        {
            val = hex[i] - 65 + 10;
        }

        decimal += val * pow(16, len);
        len--;
    }

    printf("Hexadecimal number = %s\n", hex);
    printf("Decimal number = %lld", decimal);

    return 0;
}
```

```
Enter any hexadecimal number: 41
Hexadecimal number = 41
Decimal number = 65
```

```
Enter any hexadecimal number: 23
Hexadecimal number = 23
Decimal number = 35
```

Extra 19

```
/*Author : Antarin Ghosal
Program: WAP to convert Hexadecimal to Octal number system.
*/

#include<stdio.h>

int main()
{
    char hex[17];
    long long octal, bin, place;
    int i = 0, rem, val;

    printf("Enter any hexadecimal number: ");
    gets(hex);

    octal = 0ll;
    bin = 0ll;
    place = 0ll;

    for(i=0; hex[i]!='\0'; i++)
    {
        bin = bin * place;
```

```
        switch(hex[i])
        {
            case '0':
                bin += 0;
                break;
            case '1':
                bin += 1;
                break;
            case '2':
                bin += 10;
                break;
            case '3':
                bin += 11;
                break;
            case '4':
                bin += 100;
                break;
            case '5':
                bin += 101;
                break;
            case '6':
                bin += 110;
                break;
            case '7':
                bin += 111;
                break;
            case '8':
                bin += 1000;
                break;
            case '9':
                bin += 1001;
                break;
            case 'a':
            case 'A':
                bin += 1010;
                break;
            case 'b':
            case 'B':
                bin += 1011;
                break;
            case 'c':
            case 'C':
                bin += 1100;
                break;
            case 'd':
            case 'D':
                bin += 1101;
                break;
            case 'e':
            case 'E':
                bin += 1110;
                break;
            case 'f':
            case 'F':
```

```
                bin += 1111;
                break;
            default:
                printf("Invalid hexadecimal input.");
        }

        place = 10000;
    }

    place = 1;

    while(bin > 0)
    {
        rem = bin % 1000;

        switch(rem)
        {
            case 0:
                val = 0;
                break;
            case 1:
                val = 1;
                break;
            case 10:
                val = 2;
                break;
            case 11:
                val = 3;
                break;
            case 100:
                val = 4;
                break;
            case 101:
                val = 5;
                break;
            case 110:
                val = 6;
                break;
            case 111:
                val = 7;
                break;
        }

        octal = (val * place) + octal;
        bin /= 1000;

        place *= 10;
    }

    printf("Hexadecimal number = %s\n", hex);
    printf("Octal number = %lld", octal);

    return 0;
}
```

```
Enter any hexadecimal number: 23
Hexadecimal number = 23
Octal number = 43
```

```
Enter any hexadecimal number: 41
Hexadecimal number = 41
Octal number = 101
```

Extra 20

```c
/*Author : Antarin Ghosal
Program: WAP to convert Hexadecimal to Decimal number system.
*/

#include <stdio.h>
#include <math.h>
#include <string.h>

int main()
{
    char hex[17];
    long long decimal, place;
    int i = 0, val, len;

    decimal = 0;
    place = 1;

    printf("Enter any hexadecimal number: ");
    gets(hex);

    len = strlen(hex);
    len--;

    for(i=0; hex[i]!='\0'; i++)
    {

        if(hex[i]>='0' && hex[i]<='9')
        {
            val = hex[i] - 48;
        }
        else if(hex[i]>='a' && hex[i]<='f')
        {
            val = hex[i] - 97 + 10;
        }
        else if(hex[i]>='A' && hex[i]<='F')
        {
            val = hex[i] - 65 + 10;
        }
```

```
        decimal += val * pow(16, len);
        len--;
    }
    printf("Decimal number = %lld", decimal);

    return 0;
}
```

```
Enter any hexadecimal number: 65
Decimal number = 101
```

```
Enter any hexadecimal number: 35
Decimal number = 53
```