slip no. 1
q1. write a c program to accept dimensions of a cylinder and display the surface area and volume of cylinder.
→#include<stdio.h>
#include<conio.h>
#include<math.h>
int main()
{
  float rad,height;
  clrscr();
  printf("enter radius and height of cylinder in cm\n");
   scanf("%f %f",&rad,&height);
   printf("surface area of cylinder is: %.2f\n",2*m_pi*rad*height+2*m_pi*rad*rad);
   printf("volume of cylinder is: %.2f",m_pi*pow(rad,2)*height);
   return 0;
}
Output→enter radius and height of cylinder in cm
 2 3
Surface area of cylinder is: 62.83
Volume of cylinder is: 37.70

q2. create a structure employee (id, name, salary). accept details of n employees and write a menu driven program to perform the following operations.
search employee by id
display all employees
→ #include<stdio.h>
#include<string.h>
struct employee {
   int id;
   char name[20];
   float salary;
};
int main()
{
   int n;
   printf("enter no. of employees: ");
   scanf("%d",&n);
   struct employee emp[n];
   for(int i=0; i<n; i++) {
      printf("enter id for employee %d: ",i+1);
      scanf("%d",&emp[i].id);
      printf("enter name of employee %d: ",i+1);
      scanf("%s",&emp[i].name);
      printf("enter salary of employee %d: ",i+1);
      scanf("%f",&emp[i].salary);
   }
   printf("\nsearch employee by id\n");
   int _id;

```
   printf("\nenter id: ");
   scanf("%d",&_id);
   for(int i=0; i<n; i++) {
      if(emp[i].id==_id) {
         printf("name: %s\n",emp[i].name);
         printf("salary: %.2f\n",emp[i].salary);
      }
   }
   //display all employees
   printf("\nlist of all employees\n");
   for(int i=0; i<n; i++) {
      printf("%s\n",emp[i].name);
   }
   return 0;
}
```

Output→enter no. of employees: 3
enter id for employee 1: 101
enter name of employee 1: rakesh
enter salary of employee 1: 23000

enter id for employee 2: 102
enter name of employee 2: rahul
enter salary of employee 2: 34000

enter id for employee 3: 103
enter name of employee 3: mayur
enter salary of employee 3: 21000

search employee by id
enter id: 102
name: rahul
salary: 34000.00

list of all employees
rakesh
rahul
mayur

slip no. 2
q1. write a c program to accept radius of a circle and display the area and circumference of circle.
→

```
#include<stdio.h>
int main()
{
float rad;
   printf("enter radius: ");
   scanf("%f",&rad);
   printf("area of circle is: %.2f\n",3.14*rad*rad);
   printf("circumference of circle is: %.2f",2*3.14*rad);
```

```
   return 0;
}
```
Output→enter radius: 5.6
area of circle is: 98.47
circumference of circle is: 35.17

q2. write a program to calculate sum of following series up to n terms.
sum=x+x^2/2!+x^3/3!+……
(note: write separate user defined function to calculate power and factorial)
→
```
#include<stdio.h>
int power(x,j) {
   int mult=x;
   for(int i=0; i<j; i++) {
      x=x*mult;
   }
   return x;
}
int fact(j) {
   int a=1;
   for(int i=1; i<=j+1; i++) {
      a=a*i;
   }

   return a;
}
int main()
{
   int x,n;
   printf("enter x and nth number: ");
   scanf("%d %d",&x,&n);
   float sum=0;
   for(int i=0; i<n; i++) {
    sum=sum+(1.0*power(x,i)/fact(i));
   }
   printf("sum is: %.2f",sum);
   return 0;
}
```
Output→enter x and nth number: 5 6
sum is: 112.12

Slip no. 3
Q1. Write a C program to accept temperatures in Fahrenheit (F) and display it in Celsius And Kelvin (K)
(Hint: C=5.0/9(F-32), K = C + 273.15)
→
```
#include<stdio.h>

int main()
{
float fah;
```

```
   printf(“enter temperature in fahrenheit: “);
   scanf(“%f”,&fah);
   float c=(5.0/9)*(fah-32);
   printf(“temperature in degree is: %.2f\n”,c);
   printf(“temperature in kelvin is: %.2f”,c+273.15);
   return 0;
}
```
Output→enter temperature in Fahrenheit:43
temperature in degree is: 6.11
temperature in Kelvin is: 279.26

Q2. Write a menu driven program to perform the following operations on strings using standard Library functions: 1.Length of String 2. Copy String 3. Connect Two Strings 4. Compare two strings

→
```
#include<stdio.h>
#include<string.h>
#include<stdlib.h>
int main()
{
   int num;
   printf(“length of string: 1\ncopy string: 2\nconnect two strings: 3\ncompare two strings: 4\n”);
   printf(“\nenter value: “);
   scanf(“%d”,&num);
   if(num==1) {
      char str[10];
      printf(“\nenter string:”);
      scanf(“%s”,str);
      printf(“\nlength is: %d”,strlen(str));
   }
   else if(num==2) {
      char str[10],cpy[10];
      printf(“\nenter string:”);
      scanf(“%s”,str);
      strcpy(cpy,str);
      printf(“\ncopied string is: %s”,cpy);
   }
   else if(num==3) {
      char str[10],con[10];
      printf(“\nenter two strings: “);
      scanf(“%s”,str);
      scanf(“%s”,con);
      printf(“\nconcated string is: %s”,strcat(str,con));
   }
   else if(num==4) {
      char str[10],com[10];
      printf(“\nenter two strings: “);
      scanf(“%s”,str);
      scanf(“%s”,com);
```

```
      if(strcmp(str,com)==0) {
         printf("\nsame strings");
      }
      else {
         printf("\nstrings are not same");
      }
   }
   return 0;
}
```
Output→length of string: 1
copy string: 2
connect two strings: 3
compare two strings: 4
enter value: 3
enter two strings: pune mumbai
concated string is: punemumbai

Slip no. 4
Q1. Write a C program to accept two numbers and print arithmetic and harmonic mean of the two numbers
→
```
#include<stdio.h>
int main()
{
float a,b;
   printf("enter two numbers: ");
   scanf("%f %f",&a,&b);
   printf("arithmetic mean is: %.2f\n",(a+b)/2);
   printf("harmonic mean is: %.2f",(a*b)/(a+b));
   return 0;
}
```
Output→enter two numbers: 5 4
arithmetic mean is: 4.50
harmonic mean is: 2.22

Q2. Create a structure Student (id, name, marks). Accept details of n students and write a menu driven program to perform the following operations.
Search student by id
Display all students
→
```
#include<stdio.h>
#include<string.h>
struct student {
   int id;
   char name[20];
   int marks;
};
int main()
{
```

```
    int n;
    printf("enter no. of students\n");
    scanf("%d",&n);
    struct student stu[n];
    for(int i=0; i<n; i++) {
        printf("enter id for student %d: ",i+1);
        scanf("%d",&stu[i].id);
        printf("enter name of student %d: ",i+1);
        scanf("%s",stu[i].name);
        printf("enter marks of student %d: ",i+1);
        scanf("%d",&stu[i].marks);
    }
    printf("\nsearch student by id\n");
    int _id;
    printf("\nenter id: ");
    scanf("%d",&_id);
    for(int i=0; i<n; i++) {
        if(stu[i].id==_id) {
            printf("name: %s\n",stu[i].name);
            printf("marks: %d\n",stu[i].marks);
        }
    }
    //display all students
    printf("\nlist of all students\n");
    for(int i=0; i<n; i++) {
        printf("%s\n",stu[i].name);
    }
    return 0;
}
```

Output→ enter no. of students
2
enter id for student 1: 01
enter name of student 1: rahul
enter marks of student 1: 455
enter id for student 2: 12
enter name of student 2: nayan
enter marks of student 2: 478
search student by id
enter id: 01
name: rahul
marks: 455
list of all students
rahul
nayan

Slip no. 5
Q1. Write a C program to accept dimensions length (l), breadth(b) and height(h) of a cuboids and display surface area and volume

→#include<stdio.h>
int main()
{
   float l,b,h;
   printf("enter length,breadth,height of cuboid: ");
   scanf("%f %f %f",&l,&b,&h);
   printf("surface area is: %.2f\n",2.0*(l*b+l*h+b*h));
   printf("volume is: %.2f",l*b*h);
   return 0;
}
Output→enter length,breadth,height of cuboid: 3 6 9
surface area is: 198.00
volume is: 162.00

Q2.Write a program which accepts a sentence from the user and alters it as follows: Every space is replaced by *, case of all alphabets is reversed, digits are replaced by ?
→#include<stdio.h>
int main()
{
char str[50];
   printf("enter sentence: ");
   gets(str);
 for(int i=0;str[i]!='\0';i++){
int a=str[i];
   if(str[i]>='a' && str[i]<='z'){
   str[i]=str[i]-32;
   }
   else if(str[i]>='A' && str[i]<='Z'){
   str[i]=str[i]+32;
   }
   else if(str[i]==' '){
    str[i]='*';
   }
   else if(a>=48 && a<=57){
    str[i]='?';
   }
}
 printf("updated string-: %s",str);
   return 0;
}
Output→enter sentence: Hello Good Morning 123
updated string-:hELLO*gOOD*mORNING*???

Slip no. 6
Q1. Write a C Program to accept a character from the keyboard and display its previous and Next character in order. Ex. If character entered is 'd', display "The previous character Is c", "The next character is e".
→#include<stdio.h>

```
int main()
{   char c;
    printf(“enter character: “);
    scanf(“%c”,&c);
    if(c==’A’ || c==’a’) {
        printf(“previous character is not define & next character is: %c”,++c);
    }
    else if(c==’Z’ || c==’z’) {
        printf(“next character is not define & previous character is: %c”,--c);
    }
    else {
        printf(“previous character is: %c\nnext character is: %c”,--c,c+=2);
    }
    return 0;
}
```

Output→enter character: G
previous character is: F
next character is: H

Q2. Write a program to accept a string and then count the occurrences of a specific character of a String

→

```
#include<stdio.h>
int main()
{
    char c[50];
    printf("enter the string: ");
    gets(c);
    int a=0;
    for(int i=0; c[i]!='\0'; i++) {
        a++;
    }
    for(int i=0; i<a; i++) {
        int k1=1;
        for(int j=0; j<a-i-1; j++) {
            if(c[i]==c[i+j+1]) {
                k1++;
            }
        }
        int n=1;
        for(int k=0; k<i; k++) {
            if(c[k]==c[i]) {
                n=0;
            }
        }
        if(n && (int)c[i]!=32) {
            printf("%c : %d\n",c[i],k1);
        }
    }
    return 0;
```

```
}
```
Output→enter the string: hello how are you
h : 2
e : 2
l : 2
o : 3
w : 1
a : 1
r : 1
y : 1
u : 1

Slip no. 7
Q1. Write a C program to accept the x and y coordinates of two points and compute the Distance between the two points.
→
```
#include<stdio.h>
#include<math.h>
int main()
{ int x1,y1,x2,y2;
   printf("enter x and y coordinates of first point: ");
  scanf("%d %d",&x1,&y1);
  printf("enter x and y coordinates of second point: ");
  scanf("%d %d",&x2,&y2);
 printf("distance between two points is: %.2f",sqrt(pow(x2-x1,2)+pow(y2-y1,2)));
   return 0;
}
```
Output→enter x and y coordinates of first point: 3 4
enter x and y coordinates of second point: 6 10
distance between two points is: 6.71

Q2. Write a program to calculate Multiplication of two matrices of order m*n.
→
```
#include<stdio.h>
int main()
{
   int a[2][5]= {{2,4,5,6,7},{3,0,4,5,6}};
   int b[5][5]= {{2,5,3,4,4,9},{8,3,0,5,2,3},{2,6,5,4,3},{2,6,5,4,3},{1,2,7,9,0}};
   printf("matrix 1 is \n");
   for(int i=0; i<sizeof(a)/sizeof(a[0]); i++) {
      for(int j=0; j<sizeof(a[0])/sizeof(a[0][0]); j++) {
         printf("%d ",a[i][j]);
      }
      printf("\n");
   }
   printf("\nmatrix 2 is\n");
   for(int i=0; i<sizeof(b)/sizeof(b[0]); i++) {
      for(int j=0; j<sizeof(b[0])/sizeof(b[0][0]); j++) {
         printf("%d ",b[i][j]);
      }
```

```
      printf("\n");
   }  if((sizeof(a[0])/sizeof(a[0][0]))==(sizeof(b)/sizeof(b[0]))) {
      printf("\nmultiplication of matrix 1 and matrix 2 is\n");

      for(int i=0; i<sizeof(a)/sizeof(a[0]); i++) {
         for(int c=0; c<sizeof(b[0])/sizeof(b[0][0]); c++) {
            int sum =0;
            for(int j=0; j<sizeof(a[0])/sizeof(a[0][0]); j++) {
               int num=a[i][j]*b[j][c];
               sum=sum+num;
            }
            printf("%d ",sum);
         }
         printf("\n");
      }
   }
   else {
      printf("\ndimensions mismatch\n");
   }
   return 0;
}
```

Output→Matrix 1 is
2 4 5 6 7
3 0 4 5 6
matrix 2 is
2 5 3 4 4
8 3 0 5 2
2 6 5 4 3
2 6 5 4 3
1 2 7 9 0
multiplication of Matrix 1 and Matrix 2 is
65 102 110 135 49
30 81 96 102 39

Slip no. 8

Q1. A cashier has currency notes of denomination 1, 5 and 10. Write a C program to accept the withdrawal amount from the user and display the total number of currency notes of each denomination the cashier will have to give.

→

```
#include<stdio.h>
int main()
{
   int rup;
   printf("enter withdrawal amount: ");
   scanf("%d",&rup);
   if(rup%5==0) {
      printf("rs. 1-: 0\nrs. 5-: %d\nrs. 10-: 0",rup/5);
   }
   else if(rup%10==0) {
```

```
    printf("rs. 1-: 0\nrs. 5-: 0\nrs. 10-: %d",rup/10);
  }
  else {
    printf("rs. 1-: %d\nrs. 5-: 0\nrs. 10-: 0",rup);
  }
  return 0;
}
```
Output→enter withdrawal amount: 254
Rs. 1-: 254
Rs. 5-: 0
Rs. 10-: 0

Q2. Write a menu driven program to perform the following operation on m*n matrix
1. Calculate sum of upper triangular matrix elements
2. Calculate sum of diagonal elements
→
```
#include<stdio.h>
int main()
{
  int num;
  int arr[3][3]= {{22,7,365},{124,56,322},{12,77,43}};
  int a=0;
  for(int i=0; i<sizeof(arr)/sizeof(arr[0]); i++) {
    for(int j=0; j<sizeof(arr[0])/sizeof(arr[0][0]); j++) {
      printf("%d ",arr[i][j]);
    }
    printf("\n");
  }
  printf("\nsum of upper triangular matrix: enter 1\nsum of diagonal elements: enter 2 \n");
  scanf("%d",&num);
  if(num==1) {
    for(int i=0; i<sizeof(arr)/sizeof(arr[0]); i++) {
      for(int j=i; j<sizeof(arr[0])/sizeof(arr[0][0]); j++) {
        a=a+arr[i][j];
      }
    }
    printf("sum of upper triangular matrix elements is: %d\n",a);
  }
  else if(num==2) {
    a=0;
    for(int i=0; i<sizeof(arr)/sizeof(arr[0]); i++) {
      for(int j=i; j<sizeof(arr[0])/sizeof(arr[0][0]); j++) {
        if(j==i) {
          a=a+arr[i][j];
        }
      }
    }
    printf("sum of diagonal elements of matrix is: %d\n",a);
  }
```

```
   else {
      printf(“enter valid number”);
   }
   return 0;
}
```
Output→22 7   365
            124 56 322
            12   77 43
sum of upper triangular Matrix: enter 1
sum of diagonal elements: enter 2
2
sum of diagonal elements of Matrix is: 121

Slip no. 9

Q1. Write a C program to accept a character from the user and check whether the character is a vowel or consonant.

→
```
#include<stdio.h>
int main()
{
   char a[5]= {'a','e','i','o','u'};
   printf("enter character: ");
   char c;
   scanf("%c",&c);
   int b=c+32;
   char ab=b;
   int num=0;
   for(int i=0; i<5; i++) {
      if(c==a[i] || ab==a[i]) {
         num=1;
      }
   }
   if(num) {
      printf("character is vowel");
   }
   else {
      printf("character is consonant");
   }
   return 0;
}
```
Output→enter character: y
character is consonant

Q2. Write a program to accept two numbers as range and display multiplication table of all numbers within that range.

→
```
#include<stdio.h>
int main()
{ int a,b;
   printf("enter two numbers as a range\n");
```

```
   scanf("%d %d",&a,&b);
   for(int i=a;i<=b;i++){
    for(int j=1;j<=10;j++){
      printf("%d x %d= %d\n",i,j,i*j);
   }
   printf("\n\n");
   }
   return 0;
}
```

Output→enter two numbers as a range

```
2 5
2 x 1= 2
2 x 2= 4
2 x 3= 6
2 x 4= 8
2 x 5= 10
2 x 6= 12
2 x 7= 14
2 x 8= 16
2 x 9= 18
2 x 10= 20

3 x 1= 3
3 x 2= 6
3 x 3= 9
3 x 4= 12
3 x 5= 15
3 x 6= 18
3 x 7= 21
3 x 8= 24
3 x 9= 27
3 x 10= 30

4 x 1= 4
4 x 2= 8
4 x 3= 12
4 x 4= 16
4 x 5= 20
4 x 6= 24
4 x 7= 28
4 x 8= 32
4 x 9= 36
4 x 10= 40

5 x 1= 5
5 x 2= 10
5 x 3= 15
5 x 4= 20
```

5 x 5= 25
5 x 6= 30
5 x 7= 35
5 x 8=40
5 x 9=45
5 x 10=50

Slip no. 10
Q1. Write a C program to accept the x and y coordinate of a point and find the quadrant in which the point lies.
→
```
#include<stdio.h>
int main()
{
   int x,y;
   printf("enter x & y cordinate: ");
   scanf("%d %d",&x,&y);
   if(x>0 && y>0) {
      printf("point lies in first quadrant");
   }
   else if(x<0 && y>0) {
      printf("point lies in second quadrant");
   }
   else if(x<0 && y<0) {
      printf("point lies in third quadrant");
   }
   else if(x>0 && y<0) {
      printf("point lies in fourth quadrant");
   }
   return 0;
}
```
Output→enter x & y cordinate: 4 -5
point lies in fourth quadrant

Q2. Write a program, which accepts a number n and displays each digit in words.
Example: 6702 Output = Six-Seven-Zero-Two
→
```
#include<stdio.h>
int main()
{   int a,sum=0,rem;
   printf("enter the number\n");
   scanf("%d",&a);
   for(; a>0; a/=10) {
      rem=a%10;
      sum=sum*10+rem;
   }
   int i=0;
   for(; sum>0; sum/=10) {
      rem=sum%10;
      if(i!=0) {
```

```
            printf("-");
        }
        i++;
        switch(rem) {
        case 0:
            printf("zero");
            break;
        case 1:
            printf("one");
            break;
        case 2:
            printf("two");
            break;
        case 3:
            printf("three");
            break;
        case 4:
            printf("four");
            break;
        case 5:
            printf("five");
            break;
        case 6:
            printf("six");
            break;
        case 7:
            printf("seven");
            break;
        case 8:
            printf("eight");
            break;
        case 9:
            printf("nine");
        }
    }
    return 0;
}
```

Output→enter the number
36678
Three-six-six-seven-eight

Slip no. 11
Q1. Write a C program to accept the cost price and selling price from the user. Find out if the seller has made a profit or loss and display how much profit or loss has been made.
→

```
#include<stdio.h>
int main()
{
    int cost,sell;
```

```
   printf("enter cost and selling price: ");
   scanf("%d %d",&cost,&sell);
   int loss_pro=cost-sell;
   if(loss_pro>0) {
      printf("it is a loss of Rs. %d",loss_pro);
   }
   else if(loss_pro<0) {
      printf("it is a profit of Rs. %d",abs(loss_pro));
   }
   else {
      printf("no profit no loss");
   }
   return 0;
}
```

Output→enter cost and selling price: 5000 2370
it is a loss of Rs. 2630

Q2. Accept radius from the user and write a program having menu with the following options and corresponding actions
1. Area of Circle Compute area of circle and print
2. Circumference of Circle Compute Circumference of circle and print
3. Volume of Sphere Compute Volume of Sphere and print
→

```
#include<stdio.h>
int main()
{
   float rad;
   int num;
   printf("enter radius: ");
   scanf("%f",&rad);
   printf("area of circle: enter 1\ncircumference of circle: enter 2\nvolume of sphere: enter 3\n");
   printf("enter value: ");
   scanf("%d",&num);
   if(num==1) {
      printf("area of circle is: %.2f",3.14*rad*rad);
   }
   else if(num==2) {
      printf("circumference of circle is: %.2f",2*3.14*rad);
   }
   else if(num==3) {
      printf("volume of sphere is: %.2f",(4/3)*3.14*rad*rad*rad);
   }
   else {
      printf("enter valid number");
   }
   return 0;
}
```

Output→enter radius: 3.32
area of circle: enter 1

circumference of circle: enter 2
volume of sphere: enter 3
enter value: 3
volume of sphere is: 114.91

Slip no. 12
Q1. Write a C program to calculate sum of digits of a given input number.
→#include<stdio.h>
int main()
{ int a;
   int rem=0;
   printf("enter the number: ");
   scanf("%d",&a);
   for(; a>0; a/=10) {
      int mod=a%10;
      rem=rem+mod;
   }
   printf("sum is: %d",rem);
   return 0;
}
Output→enter the number: 45847
sum is: 28

Q2. Accept two numbers from user and write a menu driven program to perform the following operations
1. swap the values of two variables
2. calculate arithmetic mean and harmonic mean of two numbers
→#include<stdio.h>
int main()
{
   int a,b,num;
   printf("enter two numbers: ");
   scanf("%d %d",&a,&b);
   printf("\nswapping of numbers: enter 1\narithmetic and harmonic mean: enter 2\n");
   printf("enter value: ");
   scanf("%d",&num);
   if(num==1) {
      int c;
      printf("before swapping: %d %d\n",a,b);
      c=a;
      a=b;
      b=c;
      printf("after swapping: %d %d\n",a,b);
   }
   else if(num==2) {
      printf("arithmetic mean is: %.2f\n",(a+b)/2.0);
      printf("harmonic mean is: %.2f\n",(a*b)/(a+b)*1.0);
   }

```
   return 0;
}
```
Output→enter two numbers: 34 56
swapping of numbers: enter 1
arithmetic and harmonic mean: enter 2
enter value: 1
before swapping: 34 56
after swapping: 56 34

Slip no. 13
Q1. Write a C program to accept the value of n and display sum of all odd numbers up to n.
→
```
#include<stdio.h>
int main()
{
   int num,sum=0;
   printf("enter n: ");
   scanf("%d",&num);
   for(int i=0; i<=num; i++) {
      if(i%2!=0) {
         sum=sum+i;
      }
   }
   printf("sum is: %d",sum);
   return 0;
}
```
Output→enter n: 30
sum is: 225

Q2. Write a program to accept a decimal number and convert it to binary, octal and hexadecimal number.
→
```
#include<stdio.h>
int main()
{   int a,b,c,rem,num=1;
   printf("enter decimal number: ");
   scanf("%d",&a);
   b=a;
   c=a;
   for(; a>0; a/=2) {
      rem=a%2;
      num=(num*10)+rem;
   }
   int sum=0;
   for(; num>1; num/=10) {
      rem=num%10;
      sum=sum*10+rem;
   }
   printf("binary number is: %d\n",sum);
   num=1;
```

```
   for(; b>0; b/=8) {
      rem=b%8;
      num=num*10+rem;
   }
   sum=0;
   for(; num>1; num/=10) {
      rem=num%10;
      sum=sum*10+rem;
   }
   printf("octal number is: %d\n",sum);
   char arr[20];
   num=-1;
   for(; c>0; c/=16) {
      rem=c%16;
      if(rem<10) {
         arr[++num]=48+rem;
      }
      else {
         arr[++num]=55+rem;
      }
   }
   printf("hexadecimal number is: ");
   for(int i=num; i>=0; i--) {
      printf("%c",arr[i]);
   }
   return 0;
}
```

Output→enter decimal number: 197
binary number is: 11000101
octal number is: 305
hexadecimal number is: C5

Slip no. 14
Q1. Write a C program to check whether a input number is Armstrong number or not.
→

```
#include<stdio.h>
int main()
{
   int a,c,d,num=0,rem,sum=0;
   printf("enter the number: ");
   scanf("%d",&a);
   c=a;
   d=a;
   for(; a>0; a/=10) {
      num+=1;
   }
   for(; c>0; c/=10) {
      int mul =1;
      for(int i=1; i<=num; i++) {
```

```
        rem=c%10;
        mul=mul*rem;
      }
      sum =sum+mul;
   }
   if(d==sum) {
      printf("it is a Armstrong number");
   }
   else {
      printf("it is not a Armstrong number ");
   }
   return 0;
}
```

Output→enter the number: 153
it is a Armstrong number

Q2. Write a program to accept a number and count number of even, odd and zero digits within that number.

→

```
#include<stdio.h>
int main()
{
   int a,rev;
   int even=0;
   int odd=0;
   int zero=0;
   printf("enter the number: ");
   scanf("%d",&a);
   for(; a>0; a/=10) {
      rev=a%10;
      if(rev%2==0) {
         even++;
      }
      else if(rev%2!=0) {
         odd++;
      }
      if(rev==0) {
         zero++;
      }
   }
   printf("cout of even numbers is %d \n",even);
   printf("cout of odd numbers is %d \n",odd);
   printf("cout of zero numbers is %d \n",zero);
   return 0;
}
```

Output→enter the number: 1034720
cout of even numbers is 4
cout of odd numbers is 3
cout of zero numbers is 2

Slip no. 15

Q1. Write a C program to check whether a input number is perfect number of not.

→

```
#include<stdio.h>
int main()
{   int a,sum=0;
    printf("enter the number: ");
    scanf("%d",&a);
    for(int i=1; i<a; i++) {
        if(a%i==0) {
            printf("factor is %d\n",i);
            sum+=i;
            printf("sum is %d\n",sum);
        }
    }
    if(sum==a) {
        printf("it is a perfect number");
    }
    else {
        printf("it is not a perfect number");
    }
    return 0;
}
```

Output→enter the number: 6
factor is 1
sum is 1
factor is 2
sum is 3
factor is 3
sum is 6
it is a perfect number

Q2. Write a program having a menu with the following options and corresponding actions
1. Area of square Accept length ,Compute area of square and print
2. Area of Rectangle Accept length and breadth, Compute area of rectangle and print
3. Area of triangle Accept base and height , Compute area of triangle and print

→

```
#include<stdio.h>
int main()
{
    int num;
    printf("area of square: enter 1\narea of rectangle: enter 2\narea of triangle: enter 3\n");
    printf("enter value: ");
    scanf("%d",&num);
    if(num==1) {
        float a;
        printf("enter side: ");
        scanf("%f",&a);
        printf("area of square is: %.2f",a*a);
```

```
    }
    else if(num==2) {
        float a,b;
        printf("enter length and breadth: ");
        scanf("%f %f",&a,&b);
        printf("area of rectangle is: %.2f",a*b);
    }
    else if(num==3) {
        float a,b;
        printf("enter base and height: ");
        scanf("%f %f",&a,&b);
        printf("area of triangle is: %.2f",0.5*a*b);
    }
    else {
        printf("enter valid number");
    }
    return 0;
}
```

Output→area of square: enter 1
area of rectangle: enter 2
area of triangle: enter 3
enter value: 3
enter base and height: 12 30
area of triangle is: 180.00

Slip no. 16

Q1. Write a C program to calculate x^y without using standard library function.

→

```
#include<stdio.h>
int main()
{
    int num1,num2;
    float mul=1;
    printf("enter base and power: ");
    scanf("%d %d",&num1,&num2);
    for(int i=1; i<=num2; i++) {
        mul=mul*num1;
    }
    printf("%.f",mul);
    return 0;
}
```

Output→enter base and power: 2 5
32

Q2. Write a program to display union and intersection of two 1D array.

→

```
#include<stdio.h>
int main()
{   int num,num1;
    int a[]= {1,5,7,4,9,0,15,12,11,344};
```

```
int b[]= {2,5,0,6,7,8,11,1,4};
num=sizeof(a)/4;
num1=sizeof(b)/4;
int add=0;
for(int i=0; i<num1; i++) {
   for(int j=0; j<num; j++) {
      if(b[i]==a[j]) {
         add++;
         break;
      }
   }
}
int arr[num+(num1-add)];
for(int i=0; i<num; i++) {
   arr[i]=a[i];
}
int ab=num;
for(int i=0; i<num1; i++) {
   int c=0;
   for(int j=0; j<num; j++) {
      if(b[i]==a[j]) {
         c=1;
         break;
      }
   }
   if(c==0) {
      arr[ab]=b[i];
      ab++;
   }
}
printf("\nunion is = ");
for(int i=0; i<num+(num1-add); i++) {
   printf("%d ",arr[i]);
}
add=0;
for(int i=0; i<num1; i++) {
   for(int j=0; j<num; j++) {
      if(b[i]==a[j]) {
         add++;
         break;
      }
   }
}
arr[add];
int var =0;
for(int i=0; i<num1; var++ ) {
   int c=0;
   for(int j=0; j<num; j++) {
```

```
            if(b[var]==a[j]) {
               c=1;
               break;
            }
         }
         if(c==1) {
            arr[i]=b[var];
            i++;
         }
      }
      printf("\nintersection is = ");
      for(int i=0; i<add; i++) {
         printf("%d ",arr[i]);
      }
      return 0;
}
```

Output→union is = 1 5 7 4 9 0 15 12 11 344 2 6 8
intersection is = 5 0 7 11 1 4

Slip no. 17

Q1. Write a C program to display multiplication table of a given input number

→

```
#include<stdio.h>
int main()
{
int a;
   printf("enter number: ");
   scanf("%d",&a);
   for(int i=1;i<=10;i++){
    printf("%d x %d = %d\n",a,i,a*i);
   }
   return 0;
}
```

Output→enter number: 4
4 x 1 = 4
4 x 2 = 8
4 x 3 = 12
4 x 4 = 16
4 x 5 = 20
4 x 6 = 24
4 x 7 = 28
4 x 8 = 32
4 x 9 = 36
4 x 10 = 40

Q2. Write a menu driven program to perform the following operation on m*n Matrix
1. Display transpose of a matrix
2. Calculate sum of all odd elements of matrix

→

```
#include<stdio.h>
```

```
int main()
{
   int ab,sum=0;
   int a[3][4]= {{2,7,3,1},{1,3,6,2},{2,9,7,4}};
   printf("Matrix is \n");
   for(int i=0; i<sizeof(a)/sizeof(a[0]); i++) {
      for(int j=0; j<sizeof(a[0])/sizeof(a[0][0]); j++) {
         printf("%d ",a[i][j]);
      }
      printf("\n");
   }
   printf("transpose of Matrix: enter 1\nadd of odd elements in Matrix: enter 2\n");
   printf("enter value: ");
   scanf("%d",&ab);
   if(ab==1) {
      printf("\ntransposed Matrix is \n");
      for(int i=0; i<sizeof(a[0])/sizeof(a[0][0]); i++) {
         for(int j=0; j<sizeof(a)/sizeof(a[0]); j++) {
            printf("%d ",a[j][i]);
         }
         printf("\n");
      }
   }
   else if(ab==2) {
      for(int i=0; i<sizeof(a)/sizeof(a[0]); i++) {
         for(int j=0; j<sizeof(a[0])/sizeof(a[0][0]); j++) {
            if(a[i][j]%2!=0) {
               sum=sum+a[i][j];
            }
         }
      }
      printf("sum of all odd elements: %d",sum);
   }
   else {
      printf("enter valid number");
   }
   return 0;
}
```

Output→Matrix is
2 7 3 1
1 3 6 2
2 9 7 4
transpose of Matrix: enter 1
add of odd elements in Matrix: enter 2
enter value: 1
transposed Matrix is
2 1 2
7 3 9

3 6 7
1 2 4

Slip no. 18
Q1. Write a C program to generate following triangle up to n lines.
1
1 2
1 2 3
→#include<stdio.h>
int main()
{
   int n;
   printf("enter rows number: ");
   scanf("%d",&n);
   for(int i =1; i<=n; i++) {
      for(int j=1; j<=i; j++) {
         printf("%d ",j);
      }
      printf("\n");
   }
   return 0;
}
Output→enter rows number: 4
1
1 2
1 2 3
1 2 3 4

Q2. Write a program to calculate sum of following series up to n terms.
Sum=X-X^2/2!+X^3/3!-……
→#include<stdio.h>
#include<math.h>
int power(x,j) {
   x=pow(x,j+1);
   return x;
}
int fact(j) {
   int a=1;
   for(int i=1; i<=j+1; i++) {
      a=a*i;
   }
   return a;
}
int main()
{
   int x,n;
   printf("enter x and nth number: ");
   scanf("%d %d",&x,&n);

```
   float sum=0;
   for(int i=0; i<n; i++) {
      if(i%2==0) {
         sum=sum+(1.0*power(x,i)/fact(i));
      }
      else {
         sum=sum-(1.0*power(x,i)/fact(i));
      }
   }
   printf("sum is: %.2f",sum);
   return 0;
}
```
Output→enter x and nth number: 4 5
sum is: 4.53

Slip no. 19
Q1. Write a C program to generate following triangle up to n lines.
* * * *
* * *
* *
*
→
```
#include<stdio.h>
int main()
{ int n;
 printf("enter rows number: ");
scanf("%d",&n);
   for(int i=n; i>0; i--) {
      for(int j=1; j<=i; j++) {
         printf("*  ");
      }
      printf("\n");
   }
   return 0;
}
```
Output→enter rows number: 4
* * * *
* * *
* *
*

Q2. Write a menu driven program to perform the following operation on m*n Matrix
1. Find sum of diagonal elements of matrix
2. Find sum of all even numbers of matrix
→
```
#include<stdio.h>
int main()
{
   int arr[4][4]= {{2,7,6,3},{1,5,4,8},{3,1,9,4},{7,5,6,3}};
   int a=0;
```

```
   for(int i=0; i<sizeof(arr)/sizeof(arr[0]); i++) {
      for(int j=0; j<sizeof(arr[0])/sizeof(arr[0][0]); j++) {
         printf("%d ",arr[i][j]);
      }
      printf("\n");
   }
   int ab;
   printf("\nsum of diagonal elements: enter 1\nsum of even elements: enter 2\n");
   printf("enter value: ");
   scanf("%d",&ab);
   if(ab==2) {
      for(int i=0; i<sizeof(arr)/sizeof(arr[0]); i++) {
         for(int j=0; j<sizeof(arr[0])/sizeof(arr[0][0]); j++) {
            if(arr[i][j]%2==0) {
               a=a+arr[i][j];
            }
         }
      }
      printf("sum of even Matrix elements is: %d\n",a);
   }
   else if(ab==1) {
      a=0;
      for(int i=0; i<sizeof(arr)/sizeof(arr[0]); i++) {
         for(int j=i; j<sizeof(arr[0])/sizeof(arr[0][0]); j++) {
            if(j==i) {
               a=a+arr[i][j];
            }
         }
      }
      printf("sum of diagonal elements of Matrix is: %d\n",a);
   }
   else {
      printf("enter valid number");
   }
   return 0;
}
```

Output→2 7 6 3
1 5 4 8
3 1 9 4
7 5 6 3
sum of diagonal elements: enter 1
sum of even elements: enter 2
enter value: 1
sum of diagonal elements of Matrix is: 19

Slip no. 20

Q1. Write a C program to generate following triangle up to n lines.

1

2 3
4 5 6
→#include<stdio.h>
int main()
{
   int n;
   printf("enter row number: ");
   scanf("%d",&n);
   int a=0;
   for(int i=1; i<=n; i++) {
      for(int j=1; j<=i; j++) {
         a++;
         printf("%d ",a);
         if(a<10) {
            printf(" ");
         }
      }
      printf("\n");
   }
   return 0;
}
Output→enter row number: 4
1
2 3
4 5 6
7 8 9 10

Q2. Write a program to calculate addition of two matrices
→#include<stdio.h>
int main()
{
   int a[3][3]= {{12,56,10},{22,77,43},{34,15,15}};
   int b[3][3]= {{23,20,47},{10,22,50},{32,45,40}};
   printf("Matrix 1 is \n");
   for(int i=0; i<sizeof(a)/sizeof(a[0]); i++) {
      for(int j=0; j<sizeof(a[0])/sizeof(a[0][0]); j++) {
         printf("%d ",a[i][j]);
      }
      printf("\n");
   }
   printf("\nmatrix 2 is\n");
   for(int i=0; i<sizeof(b)/sizeof(b[0]); i++) {
      for(int j=0; j<sizeof(b[0])/sizeof(b[0][0]); j++) {
         printf("%d ",b[i][j]);
      }
      printf("\n");
   }
   if(sizeof(a[0])==sizeof(b[0]) && (sizeof(a)/sizeof(a[0]))==(sizeof(b)/sizeof(b[0]))) {

```
      printf("\nsum of Matrix 1 and Matrix 2 is\n");
      for(int i=0; i<sizeof(a)/sizeof(a[0]); i++) {
         for(int j=0; j<sizeof(a[0])/sizeof(a[0][0]); j++) {
            printf("%d ",a[i][j]+b[i][j]);
         }
         printf("\n");
      }
   }
   else {
      printf("\ndimensions mismatch\n");
   }
   return 0;
}
```

Output→Matrix 1 is
12 56 10
22 77 43
34 15 15

matrix 2 is
23 20 47
10 22 50
32 45 40

sum of Matrix 1 and Matrix 2 is
35 76 57
32 99 93
66 60 55

Slip no. 21
Q1. Write a C program to generate following triangle up to n lines.
A
A B
A B C
→

```
#include<stdio.h>
int main()
{
   int n;
   printf("enter row number: ");
   scanf("%d",&n);
   int alpha=64;
   for(int i=1; i<=n; i++) {
      for(int j =1; j<=i; j++) {
         alpha++;
         printf("%c  ",alpha);
      }
      alpha=64;
      printf("\n");
   }
```

```
   return 0;
}
```
Output→enter row number: 5
```
A
A  B
A  B  C
A  B  C  D
A  B  C  D  E
```

Q2. Create a structure employee (eno, ename, salary). Accept details of n employees and write a menu driven program to perform the following operations options.
1. Display all employees having salary > 5000
2. Display all employees

→
```
#include<stdio.h>
#include<string.h>
struct employee {
   int eno;
   char ename[20];
   float salary;
};
int main()
{
   int n;
   printf("enter no. of employees: ");
   scanf("%d",&n);
   struct employee emp[n];
   for(int i=0; i<n; i++) {
      printf("enter id for employee %d: ",i+1);
      scanf("%d",&emp[i].eno);
      printf("enter name of employee %d: ",i+1);
      scanf("%s",&emp[i].ename);
      printf("enter salary of employee %d: ",i+1);
      scanf("%f",&emp[i].salary);
   }
   int ab;
   printf("\ndisplay employees with salary>5000: enter 1\ndisplay all employees: enter 2\n");
   printf("enter value: ");
   scanf("%d",&ab);
   if(ab==1) {
      for(int i=0; i<n; i++) {
         if(emp[i].salary>5000) {
            printf("no: %d\n",emp[i].eno);
            printf("name: %s\n",emp[i].ename);
            printf("salary: %.2f\n",emp[i].salary);
         }
         printf("\n");
      }
   }
```

```
   //display all employees
   else if(ab==2) {
      printf("\nlist of all employees\n");
      for(int i=0; i<n; i++) {
         printf("%s\n",emp[i].ename);
      }
   }
   else {
      printf("enter valid number");
   }
   return 0;
}
```

Output→enter no. of employees: 3
enter id for employee 1: 10
enter name of employee 1: rahul
enter salary of employee 1: 25000
enter id for employee 2: 20
enter name of employee 2: manesh
enter salary of employee 2: 24000
enter id for employee 3: 30
enter name of employee 3: tarun
enter salary of employee 3: 12000

display employees with salary>5000: enter 1
display all employees: enter 2
enter value: 1
no: 10
name: rahul
salary: 25000.00

no: 20
name: manesh
salary: 24000.00

no: 30
name: tarun
salary: 12000.00

Slip no. 22
Q1. Write a C program to generate following triangle up to n lines.
A B C
A B
A
→

```
#include<stdio.h>
int main()
{
   int n;
   printf("enter rows number: ");
```

```
   scanf("%d",&n);
   int num=64;
   for(int i=n; i>0; i--) {
      for(int j=1; j<=i; j++) {
         num++;
         if(num>90) {
            break;
         }
         printf("%c ",num);
      }
      num=64;
      printf("\n");
   }
   return 0;
}
```

Output→enter rows number: 4

A B C D

A B C

A B

A

Q2. Write a menu driven program to perform the following operation on m*n Matrix

1. Find sum of non diagonal elements of matrix
2. Find sum of all odd numbers of matrix

→

```
#include<stdio.h>
int main()
{
   int arr[4][4]= {{2,7,6,3},{1,5,4,8},{3,1,9,4},{7,5,6,3}};
   int a=0;
   for(int i=0; i<sizeof(arr)/sizeof(arr[0]); i++) {
      for(int j=0; j<sizeof(arr[0])/sizeof(arr[0][0]); j++) {
         printf("%d ",arr[i][j]);
      }
      printf("\n");
   }
   int ab;
   printf("\nsum of non diagonal elements: enter 1\nsum of odd elements: enter 2\n");
   printf("enter value: ");
   scanf("%d",&ab);
   if(ab==2) {
      for(int i=0; i<sizeof(arr)/sizeof(arr[0]); i++) {
         for(int j=0; j<sizeof(arr[0])/sizeof(arr[0][0]); j++) {
            if(arr[i][j]%2!=0) {
               a=a+arr[i][j];
            }
         }
      }
      printf("sum of odd Matrix elements is: %d\n",a);
```

```
    }
    else if(ab==1) {
        a=0;
        for(int i=0; i<sizeof(arr)/sizeof(arr[0]); i++) {
            for(int j=0; j<sizeof(arr[0])/sizeof(arr[0][0]); j++) {
                if(j==i) {
                    continue;
                }
                else {
                    a=a+arr[i][j];
                }
            }
        }
        printf("sum of non diagonal elements of Matrix is: %d\n",a);
    }
    else {
        printf("enter valid number");
    }
    return 0;
}
```

Output→2 7 6 3
1 5 4 8
3 1 9 4
7 5 6 3
sum of non diagonal elements: enter 1
sum of odd elements: enter 2
enter value: 1
sum of non diagonal elements of Matrix is: 55

Slip no. 23

Q1. Write a C program to accept n elements of 1D array and then display sum of all elements of array.

→

```
#include<stdio.h>
int main()
{   int num,sum=0;
    printf("enter number as a size of array: ");
    scanf("%d",&num);
    int a[num];
    for(int i=0; i<num; i++) {
        printf("enter number at a[%d]: ",i);
        scanf("%d",&a[i]);
    }
    for(int i=0; i<num; i++) {
        sum =sum+a[i];
    }
    printf("sum of elements is: %d",sum);
    return 0;
}
```

Output→enter number as a size of array: 4

enter number at a[0]: 12
enter number at a[1]: 45
enter number at a[2]: 10
enter number at a[3]: 22
sum of elements is: 89

Q2. Accept n integers in an array. Copy only the non-zero elements to another array (allocated using dynamic memory allocation). Calculate the sum and average of non-zero elements.

→

```
#include<stdio.h>
#include<stdlib.h>
int main()
{   int num,sum=0;
    printf("enter number as a size of array: ");
    scanf("%d",&num);
    int a[num];
    for(int i=0; i<num; i++) {
        printf("enter number at a[%d]: ",i);
        scanf("%d",&a[i]);
    }
    int ab=0;
    for(int i =0; i<num; i++) {
        if(a[i]!=0) {
            ab++;
        }
    }
    int count=0;
    int *ptr=(int*)malloc(ab*sizeof(int));
    for(int i=0; i<num; i++) {
        if(a[i]!=0) {
            ptr[count]=a[i];
            count++;
        }
    }
    for(int i=0; i<ab; i++) {
        sum=sum+ptr[i];
    }
    printf("sum of elements is: %d\n",sum);
    printf("average of elements is: %.2f\n",1.0*sum/ab);
    return 0;
}
```

Output→enter number as a size of array: 4
enter number at a[0]: 12
enter number at a[1]: 34
enter number at a[2]: 54
enter number at a[3]: 30
sum of elements is: 130
average of elements is: 32.50

Slip no. 24

Q1. Write a C program to find maximum elements of 1D array

→

```
#include<stdio.h>
int main()
{
   int j;
   int a[]= {45,4890,7,35,1560,34,16,567,9800,20,75,2234,22};
   int num=sizeof(a)/sizeof(a[0]);
   int b[num];
   for(int i =0; i<num; i++) {
      b[i]=a[i];
   }
   for(int i=0; i<sizeof(a)/sizeof(a[0]); i++) {
      if(a[i]>a[i+1]) {
         a[i+1]=a[i];
         j=a[i+1];
      }
   }
   printf("maximum element is: %d\n",j);
   return 0;
}
```

Output→maximum element is: 9800

Q2. Create a structure Book (Bno, Bname, Price). Accept details of n Books and write a menu driven program to perform the following operations options.

1. Display all Books having price > 500
2. Display Book having maximum price

→

```
#include<stdio.h>
#include<string.h>
struct book {
   int bno;
   char bname[20];
   float price;
};
int main()
{
   int n;
   printf("enter no. of books: ");
   scanf("%d",&n);
   struct book b[n];
   for(int i=0; i<n; i++) {
      printf("enter no for book %d: ",i+1);
      scanf("%d",&b[i].bno);
      printf("enter name of book %d: ",i+1);
      scanf("%s",&b[i].bname);
      printf("enter price of book %d: ",i+1);
      scanf("%f",&b[i].price);
   }
```

```
    int ab;
    printf("\ndisplay books with price>500: enter 1\ndisplay book with max price: enter 2\n");
    printf("enter value: ");
    scanf("%d",&ab);
    if(ab==1) {
        for(int i=0; i<n; i++) {
            if(b[i].price>500) {
                printf("no: %d\n",b[i].bno);
                printf("name: %s\n",b[i].bname);
                printf("price: %.f\n",b[i].price);
            }
            printf("\n");
        }
    }
    else if(ab==2) {
        int count=0;
        printf("\nbook with max price\n");
        for(int i=0; i<n; i++) {
            if(b[i].price>count) {
                count=b[i].price;
            }
        }
        for(int i=0; i<n; i++) {
            if(b[i].price==count) {
                printf("book no. : %d\n",b[i].bno);
                printf("book name: %s\n",b[i].bname);
                printf("book price: %.f",b[i].price);
            }
        }
    }
    else {
        printf("enter valid number");
    }
    return 0;
}
```

Output→enter no. of books: 3
enter no for book 1: 1
enter name of book 1: statistics
enter price of book 1: 350
enter no for book 2: 2
enter name of book 2: dbms
enter price of book 2: 560
enter no for book 3: 3
enter name of book 3: AI
enter price of book 3: 670

display books with price>500: enter 1
display book with max price: enter 2

enter value: 2

book with max price
book no. : 3
book name: AI
book price: 670

Slip no. 25
Q1. Write a C program to calculate sum of all even elements of a matrix.
→

```
#include<stdio.h>
int main()
{
   int sum=0;
   int a[3][4]= {{2,7,3,1},{1,3,6,2},{2,9,7,4}};
   printf("Matrix is \n");
   for(int i=0; i<sizeof(a)/sizeof(a[0]); i++) {
      for(int j=0; j<sizeof(a[0])/sizeof(a[0][0]); j++) {
         printf("%d ",a[i][j]);
      }
      printf("\n");
   }
   for(int i=0; i<sizeof(a)/sizeof(a[0]); i++) {
      for(int j=0; j<sizeof(a[0])/sizeof(a[0][0]); j++) {
         if(a[i][j]%2==0) {
            sum=sum+a[i][j];
         }
      }
   }
   printf("sum of all even elements: %d",sum);
   return 0;
}
```

Output→Matrix is
2 7 3 1
1 3 6 2
2 9 7 4
sum of all even elements: 16

Q2. Write a menu driven program for the following option
1. Check input number is Armstrong or not
2. Check input number is Perfect or not
→

```
#include<stdio.h>
int main()
{
   int a,c,d,ab,num=0,rem,sum=0;
   printf("enter the number: ");
   scanf("%d",&a);
   printf("\ncheck for Armstrong number: enter 1\ncheck for perfect number: enter 2");
   printf("\nenter value: ");
```

```
   scanf("%d",&ab);
   if(ab==1) {
      c=a;
      d=a;
      for(; a>0; a/=10) {
         num+=1;
      }
      for(; c>0; c/=10) {
         int mul =1;
         for(int i=1; i<=num; i++) {
            rem=c%10;
            mul=mul*rem;
         }
         sum =sum+mul;
      }
      if(d==sum) {
         printf("it is a Armstrong number");
      }
      else {
         printf("it is not a Armstrong number ");
      }
   }
   if(ab==2) {
      for(int i=1; i<a; i++) {
         if(a%i==0) {
            sum+=i;
         }
      }
      if(sum==a) {
         printf("it is a perfect number");
      }
      else {
         printf("it is not a perfect number");
      }
   }
   return 0;
}
```

Output→enter the number: 28
check for Armstrong number: enter 1
check for perfect number: enter 2
enter value: 2
it is a perfect number

Slip no. 26

Q1. Write a C program to calculate length of string without using standard functions.

→

```
#include<stdio.h>
int main()
{
```

```
   int count=0;
   char str[30];
   printf("enter string: ");
   gets(str);
   for(int i=0; str[i]!='\0'; i++) {
      count++;
   }
   printf("length of string is: %d",count);
   return 0;
}
```
Output→enter string: pune mumbai
length of string is: 11

Q2. Write a program to display the elements of an array containing n integers in the Reverse order using a pointer to the array.

→
```
#include<stdio.h>
int main()
{
   int str[]= {12,45,44,57,39,41,90};
   int a=sizeof(str)/sizeof(int)-1;
   int *ptr=&str[a];
   for(int i=0; i<=a; ptr--) {
      printf("%d ",*ptr);
      i++;
   }
   return 0;
}
```
Output→90 41 39 57 44 45 12

Slip no. 27

Q1. Write a program to count the occurrences of vowel from a input string.

→
```
#include<stdio.h>
int main()
{
   char a[]= {'a','e','i','o','u'};
   char str[30];
   printf("enter string: ");
   gets(str);
   int num=0;
   for(int i=0; str[i]!='\0'; i++) {
      char c=str[i];
      int b=c+32;
      char ab=b;
      for(int j=0; j<5; j++) {
         if(c==a[j] || ab==a[j]) {
            num+=1;
         }
      }
```

```
    }
    printf("count of vowel is: %d",num);
    return 0;
}
```
Output→enter string: sinhgad pune
count of vowel is: 4

Q2. Create a structure Item (Ino, Iname, Price). Accept details of n Items and write a menu driven program to perform the following operations options.
1. Display all Items having price > 800
2. Display Item record with Ino=2

→
```
#include<stdio.h>
#include<string.h>
struct item {
    int ino;
    char iname[20];
    float price;
};
int main()
{
    int n;
    printf("enter no. of items: ");
    scanf("%d",&n);
    struct item it[n];
    for(int i=0; i<n; i++) {
        printf("enter no for item %d: ",i+1);
        scanf("%d",&it[i].ino);
        printf("enter name of item %d: ",i+1);
        scanf("%s",&it[i].iname);
        printf("enter price of item %d: ",i+1);
        scanf("%f",&it[i].price);
    }
    int ab,flag=1;
    printf("\ndisplay items with price>800: enter 1\ndisplay item record with ino=2: enter 2\n");
    printf("enter value: ");
    scanf("%d",&ab);
    if(ab==1) {
        for(int i=0; i<n; i++) {
            if(it[i].price>800) {
                printf("no: %d\n",it[i].ino);
                printf("name: %s\n",it[i].iname);
                printf("price: %.f\n",it[i].price);
            }
            printf("\n");
        }
    }
    else if(ab==2) {
        int count=0;
```

```
      for(int i=0; i<n; i++) {
         if(it[i].ino==2) {
            printf("item name: %s\n",it[i].iname);
            printf("item price: %.f",it[i].price);
            flag=0;
         }
      }
      if(flag) {
         printf("no one item available with ino 2");
      }
   }
   else {
      printf("enter valid number");
   }
   return 0;
}
```

Output→enter no. of items: 3
enter no for item 1: 2
enter name of item 1: table
enter price of item 1: 1200
enter no for item 2: 10
enter name of item 2: glass
enter price of item 2: 230
enter no for item 3: 20
enter name of item 3: bag
enter price of item 3: 200

display items with price>800: enter 1
display item record with ino=2: enter 2
enter value: 2
item name: table
item price: 1200

Slip no. 28
Q1. Write a program to accept a string and then count the occurrences of a specific character of a string.
→

```
#include<stdio.h>
int main()
{
   char c[50];
   printf("enter the string: ");
   gets(c);
   int a=0;
   for(int i=0; c[i]!='\0'; i++) {
      a++;
   }
   for(int i=0; i<a; i++) {
      int k1=1;
      for(int j=0; j<a-i-1; j++) {
```

```
            if(c[i]==c[i+j+1]) {
                k1++;
            }
        }
        int n=1;
        for(int k=0; k<i; k++) {
            if(c[k]==c[i]) {
                n=0;
            }
        }
        if(n && (int)c[i]!=32) {
            printf("%c : %d\n",c[i],k1);
        }
    }
    return 0;
}
```

Output→enter the string: sinhgad narhe

```
s : 1
i : 1
n : 2
h : 2
g : 1
a : 2
d : 1
r : 1
e : 1
```

Q2. Write a program to accept two numbers as range and display multiplication table of all numbers within that range.

→

```
#include<stdio.h>
int main()
{   int a,b;
    printf("enter two numbers as a range\n");
    scanf("%d %d",&a,&b);
    for(int i=a; i<=b; i++) {
        for(int j=1; j<=10; j++) {
            printf("%d x %d= %d\n",i,j,i*j);
        }
        printf("\n\n");
    }
    return 0;
}
```

Output→enter two numbers as a range

```
2 4
2 x 1= 2
2 x 2= 4
2 x 3= 6
2 x 4= 8
```

2 x 5= 10
2 x 6= 12
2 x 7= 14
2 x 8= 16
2 x 9= 18
2 x 10= 20

3 x 1= 3
3 x 2= 6
3 x 3= 9
3 x 4= 12
3 x 5= 15
3 x 6= 18
3 x 7= 21
3 x 8= 24
3 x 9= 27
3 x 10= 30

4 x 1= 4
4 x 2= 8
4 x 3= 12
4 x 4= 16
4 x 5= 20
4 x 6= 24
4 x 7= 28
4 x 8= 32
4 x 9= 36
4 x 10= 40

Slip no. 29
Q1. Write a C program to calculate factorial of a number using user defined function.
→#include<stdio.h>

```
float fact(n) {
   float mult=1.0;
   for(int i=2; i<=n; i++) {
      mult=mult*i;
   }
   return mult;
}
int main()
{
   int a;
   printf("enter no: ");
   scanf("%d",&a);
   printf("factorial of %d is: %.f",a,fact(a));
   return 0;
}
```

Output→enter no: 6

factorial of 6 is: 720

Q2. Write a program, which accepts a number n and displays each digit separated by tabs.
Example: 6702 Output = 6 7 0 2
→#include<stdio.h>

```
int main()
{   int a,sum=0,rem;
    printf("enter the number\n");
    scanf("%d",&a);
    for(; a>0; a/=10) {
        rem=a%10;
        sum=sum*10+rem;
    }
    int i=0;
    for(; sum>0; sum/=10) {
        rem=sum%10;
        if(i!=0) {
            printf("\t");
        }
        if(i==5) {
            printf("\n");
        }
        i++;
        switch(rem) {
        case 0:
            printf("0");
            break;
        case 1:
            printf("1");
            break;
        case 2:
            printf("2");
            break;
        case 3:
            printf("3");
            break;
        case 4:
            printf("4");
            break;
        case 5:
            printf("5");
            break;
        case 6:
            printf("6");
            break;
        case 7:
            printf("7");
            break;
```

```
      case 8:
         printf("8");
         break;
      case 9:
         printf("9");
      }
   }
   return 0;
}
```
Output→enter the number
23765
2 3 7 6 5

Slip no. 30
Q1. Write a program to find sum of digits of a given input number using user defined Function
→
```
#include<stdio.h>
int sum(a) {
   int rem=0;
   for(; a>0; a/=10) {
      int mod=a%10;
      rem=rem+mod;
   }
   return rem;
}
int main()
{  int a;
   printf("enter the number: ");
   scanf("%d",&a);
   printf("sum of digits is: %d",sum(a));
   return 0;
}
```
Output→enter the number: 3697
sum of digits is: 25

Q2. Write a program to accept a number and count number of even, odd and zero digits within that number.
→
```
#include<stdio.h>
int main()
{
   int a,rev;
   int even=0;
   int odd=0;
   int zero=0;
   printf("enter the number: ");
   scanf("%d",&a);
   for(; a>0; a/=10) {
      rev=a%10;
      if(rev%2==0) {
```

```
            even++;
        }
        else if(rev%2!=0) {
            odd++;
        }
        if(rev==0) {
            zero++;
        }
    }
    printf("cout of even numbers is %d \n",even);
    printf("cout of odd numbers is %d \n",odd);
    printf("cout of zero numbers is %d \n",zero);
    return 0;
}
```

Output→enter the number: 304796
cout of even numbers is 3
cout of odd numbers is 3
cout of zero numbers is 1