C PROGRAMMING SLIPS – ASSIGNMENT 2

NAME : SOHAIL SHAIKH

CLASS : FY BBA(CA)

Slip1

Q1. Write a C program to accept dimensions of a cylinder and display the surface area and volume of cylinder. [15 Marks]

```
#include <stdio.h> int
main()
{
   float radius, height;     float
surface_area, volume;
   printf("Enter  value for  radius and height of a cylinder : \n");
   scanf("%f%f", &radius, &height);
   surface_area = 2 * (22 / 7) * radius * (radius + height);
volume = (22 / 7) * radius * radius * height;     printf("Surface
area of cylinder is: %f", surface_area);     printf("\n Volume
of cylinder is : %f", volume);
}
```

Q2. Create a structure employee (id, name, salary). Accept details of n employees and write a menu driven program to perform the following operations. [25 Marks] Search employee by id Display all employees

```
#include<stdio.h>
struct details
{
    char name[30];
    int eid;
int salary;
}emp[5];
void emp_search(int r)
{      int
id,i;
```

```
    printf("\nEnter Employee-Id to be Searched : ");
scanf("%d",&id);
   printf("---------------------------------------\n");
    for(i=0;i<r;i++)
    {
        if(emp[i].eid==id)
        {
            printf("Employee Id : %d",emp[i].eid);
printf("\nName        : %s",emp[i].name);
printf("\nSalary      : %d\n",emp[i].salary);
        }
    }
}
void display(int r)
{     int
i;
    printf("\nList of All Employees:\n");      printf("------------------------------
\n");
    printf("Emp-Id\tEmp-Name  Salary\n");
    printf("-------------------------------\n");
    for(i=0;i<r;i++)
    {
        printf("%d\t%s\t  %d\n",emp[i].eid,emp[i].name,emp[i].salary);
    }
}
int main()
{
    int n,i,ch;
    printf("/*How Many Employee Record You Want to Add*/\n\nEnter Limit  : ");
scanf("\n %d",&n);
    for(i=0;i<n;i++)
    {
        printf("---------------------------------------");
        printf("\n\tEnter Details of Employee-%d",i+1);          printf("\n----------------
----------------------");
        printf("\nName of Employee : ");
scanf("%s",emp[i].name);
printf("Employee-Id      : ");
scanf("%d",&emp[i].eid);          printf("Salary
: ");
```

```
        scanf("%d",&emp[i].salary);
    }
    while(1)
    {
        printf("----------------------------------------\n");
printf("\t\tMenu\n");          printf("----------------------------
----------");          printf("\n 1:Search Employee by E-
ID");          printf("\n 2:List of All Employee");
printf("\n 3:Exit");          printf("\n----------------------------
----------\n");
        printf("Enter Your Choice : ");
scanf("\n %d",&ch);          switch(ch)
        {
            case 1: emp_search(n);
            break;
case 2: display(n);
            break;
            case 3: exit(0);
        }
    }
return 0;
}
```

Slip2

Q1. Write a C program to accept radius of a circle and display the area and circumference of a circle. [15 Marks] #include<stdio.h>

```
int main() {
   int
rad;
  float PI = 3.14, area, ci;

  printf("\nEnter radius of circle: ");
scanf("%d", &rad);

  area = PI * rad * rad;
printf("\nArea of circle : %f ", area);

  ci = 2 * PI * rad;
printf("\nCircumference : %f ", ci);
```

```
   return (0);
}
```

Q2. Write a program to calculate sum of following series up to n terms. [25 Marks]
Sum=X+X2/2!+X3/3!+……
(Note: Write separate user defined function to calculate power and factorial)

```
#include<math.h> #include<stdio.h>
    int fact(int index)
    {
    int f = 1, i;
    for(i = 1; i <= index; i ++)
    {
        f = f*i;
    }
    return f;
    }
// Driver Code
void main()
{     int x =
1;
    int n = 2;
    double sum = 0,   m;
    // Sum of n-1 terms starting from 2nd term
int i;     for (i = 1; i < =n; i++) {     m =  pow(x,
i) / fact(i);
    sum = sum + m;
   }
    printf("\n%.4f", sum);
getch();
}
```

Slip 3

Q1. Write a C program to accept temperatures in Fahrenheit (F) and display it in Celsius(C)
and Kelvin (K) (Hint: C=5.0/9(F-32), K = C + 273.15) [15 Marks]

```
#include<stdio.h>
#include<conio.h> int
main()
{ float
cel,fer,kel;

printf("Enter Temperature in Fahrenheit :"); scanf("%f",&fer);

cel= (fer-32)/1.8 ;
printf("Celsius = %f \n",cel);

kel = (fer-32)/1.8 + 273.15 ;
printf("Kelvin  = %f \n",kel);

return (0) ;
}
```

Q2. Write a menu driven program to perform the following operations on strings using standard library functions: [25 Marks]
Length of String 2. Copy String 3. Connect Two Strings 4. Compare two strings

```
#include<stdio.h>
#include<conio.h> #include<string.h>
  void main()
{
  char str[20],str1[20];
int ch,i,j;   clrscr();
  do
{
  printf("\n****MENU****");
printf("\n1:Find Length");
printf("\n2:Copy the Strings");
printf("\n3:Compare the Strings");
printf("\n4:Concatenate the Strings");
```

```
printf("\n5:Exit");   printf("\nEnter your
choice: ");   scanf("%d",&ch);

  switch(ch)
{
  case 1:
   printf("\nEnter the string: ");
   scanf("%s",&str);
  i=strlen(str);
    printf("\nThe Length of given string is: %d",i);
   break;

  case 2:
    printf("\nEnter the first string: ");
    scanf("%s",&str);     printf("\nEnter the
second string: ");     scanf("%s",&str1);
strcpy(str,str1);     printf("\nThe Copied
string is: %s",str);     break;

  case 3:
    printf("\nEnter the first string: ");
scanf("%s",&str);     printf("\nEnter the
second string: ");
scanf("%s",&str1);
j=strcmp(str,str1);     if(j==0)
  {
    printf("\nThe string is same");
  }
    else
  {
    printf("\nThe string is not same");
  }
    break;

  case 4:
    printf("\nEnter the first string: ");
scanf("%s",&str);     printf("\nEnter the second
string: ");     scanf("%s",&str1);
strcat(str,str1);     printf("\nThe Concatenated
string is: %s",str);     break;
```

```
  case 5:
exit(0);
break;
}
}
 while(ch!=5);  getch();
}
```

Slip4

Q1. Write a C program to accept two numbers and print arithmetic and harmonic mean of the two numbers (Hint: AM= (a+b)/2 ,HM = ab/(a+b)) [15 Marks]

```
#include <stdio.h> int
main()
{    int
a,b;
   float arithmetic_mean,harmonic_mean;
   printf("enter two no. A and B :-");
scanf("%d%d",&a,&b);    arithmetic_mean
= (a+b) /2;    harmonic_mean = (a*b) /
(a+b);
   printf("arithmetic mean = %f and harmonic mean =
%f",arithmetic_mean,harmonic_mean);
}
```

Q2. Create a structure Student (id, name, marks). Accept details of n students and write a menu driven program to perform the following operations. [25 Marks] a) Search student by id

b) Display all students

```
#include<stdio.h> #include<stdlib.h>
struct details
{
    char name[30];
int eid;      int
salary;
}emp[5];
void emp_search(int r)
{      int
id,i;
    printf("\nEnter Employee-Id to be Searched : ");
scanf("%d",&id);
```

```
    printf("---------------------------------------\n");
for(i=0;i<r;i++)
   {
if(emp[i].eid==id)
       {
            printf("Employee Id : %d",emp[i].eid);
   printf("\nName        : %s",emp[i].name);
   printf("\nSalary      : %d\n",emp[i].salary);
         }
     }
}
void display(int r)
{      int
i;
     printf("\nList of All Employees:\n");      printf("------------------------------
\n");
     printf("Emp-Id\tEmp-Name  Salary\n");
     printf("-------------------------------\n");
     for(i=0;i<r;i++)
     {
          printf("%d\t%s\t  %d\n",emp[i].eid,emp[i].name,emp[i].salary);
     }
}
int main()
{
     int n,i,ch;
     printf("/*How Many Employee Record You Want to Add*/\n\nEnter Limit  : ");
scanf("\n %d",&n);
     for(i=0;i<n;i++)
     {
          printf("---------------------------------------");
          printf("\n\tEnter Details of Employee-%d",i+1);          printf("\n----------------
----------------------");
          printf("\nName of Employee : ");
scanf("%s",emp[i].name);
printf("Employee-Id      : ");
scanf("%d",&emp[i].eid);          printf("Salary
: ");
          scanf("%d",&emp[i].salary);
     }
```

```
    while(1)
    {
        printf("----------------------------------------\n");
printf("\t\tMenu\n");          printf("----------------------
------------------");          printf("\n 1:Search
Employee by E-ID");          printf("\n 2:List of All
Employee");          printf("\n 3:Exit");
printf("\n----------------------------------------\n");
printf("Enter Your Choice : ");
        scanf("\n %d",&ch);
        switch(ch)
        {
            case 1: emp_search(n);
  break;
           case 2: display(n);
break;
            case 3: exit(0);
        }
    }
return 0;
}
```

Slip 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 (Hint : surface area=2(lb+lh+bh), volume=lbh) [15 Marks] #include <stdio.h> int main()

```
{
  float length, width, height;
  float SA, Volume;

  printf("\nPlease Enter Length, Width and Height of a Cuboid\n");
scanf("%f %f %f",&length, &width, &height);
  SA = 2 * (length * width + length * height + width * height);
Volume = length * width * height;
  printf("\n The Surface Area of a Cuboid = %.2f\n",SA);
printf("\n The Volume of a Cuboid = %.2f\n",Volume);
```

```
}
```

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 ? [25
Marks]

```
# include<stdio.h>
  /* Function to get sum of digits */ int
main()
{   int c =
0; char
ch,
s[100];
printf("Inp
ut a
string\n");
gets(s);
    for(c=0;s[c] != '\0';c++) {
   ch = s[c];
     if (ch >= 'A' && ch <= 'Z')
s[c] = s[c] + 32;       else if (ch >=
'a' && ch <= 'z')
         s[c] = s[c] - 32;
else if(s[c]==' ')
s[c] = '*';
      else if(s[c]>0 || s[c]<9)
         s[c] = '?';
         }
    puts(s);
return 0;
}
```

Slip 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”. [15 Marks]

```
#include <stdio.h> int
main()
{
char ch; printf("Enter character:\t");
scanf("%c", &ch); printf("You entered:
%c\n", ch); printf("Previous character:
%c\n", ch - 1);
printf("Next character: %c\n", ch + 1);
}
```

Q2. Write a program to accept a string and then count the occurrences of a specific character of a string. [25 Marks]

```
#include <stdio.h>
#include <string.h>
  // Driver code int
main()
{     char str[50]= "geeksforgeeks";
    char c ;
int res = 0;
   printf("\n enter character ");
scanf("%c",&c);
    for (int i=0;i<strlen(str);i++)
// checking character in string
        if (str[i] == c)            res++;
printf("occurence of %c=%d",c,res++);
return 0; }
```

Slip7

Q1. Write a C program to accept the x and y coordinates of two points and compute the distance between the two points. [15 Marks]

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

int main()
{
    float distance, a, b, c, d;
    printf("\nEnter The Coordinates of Point A:\n");
    printf("\nX - Axis Coordinate: \t");
scanf("%f", &a);
```

```
   printf("\nY - Axis Coordinate: \t");
scanf("%f", &b);     printf("\nEnter The
Coordinates of Point B:\n");
   printf("\nx - Axis Coordinate:\t");
scanf("%f", &c);
   printf("\nY - Axis Coordinate: \t");     scanf("%f", &d);
distance = sqrt((c - a) * (c - a) + (d - b) * (d- b));
printf("\nDistance between Points A and B: %f\n",  distance);
return 0; }
```

Q2. Write a program to calculate Multiplication of two matrices of order m*n. [25 Marks]

```
#include
<stdio.h> int main()
{     int a[10][10], b[10][10], result[10][10], r1, c1, r2, c2, i, j,
k;  printf("Enter rows and column for first matrix: ");
  scanf("%d %d", &r1, &c1);

   printf("Enter rows and column for second matrix: ");
scanf("%d %d",&r2, &c2);

   // Column of first matrix should be equal to column of second matrix and
while (c1 != r2)
   {
       printf("Error! column of first matrix not equal to row of second.\n\n");
printf("Enter rows and column for first matrix: ");         scanf("%d %d",
&r1, &c1);
       printf("Enter rows and column for second matrix: ");
scanf("%d %d",&r2, &c2);
   }
   // Storing elements of first matrix.
   printf("\nEnter elements of matrix 1:\n");
   for(i=0; i<r1; ++i)
       for(j=0; j<c1; ++j)
       {
           printf("Enter elements a%d%d: ",i+1, j+1);
scanf("%d", &a[i][j]);
       }
   // Storing elements of second matrix.
printf("\nEnter elements of matrix 2:\n");
   for(i=0; i<r2; ++i)
       for(j=0; j<c2; ++j)
```

```
        {
            printf("Enter elements b%d%d: ",i+1, j+1);
scanf("%d",&b[i][j]);
        }

    // Initializing all elements of result matrix to 0
for(i=0; i<r1; ++i)
        for(j=0; j<c2; ++j)
        {
result[i][j] = 0;
        }

   // Multiplying matrices a and b and
// storing result in result matrix
for(i=0; i<r1; ++i)      for(j=0; j<c2;
++j)
          for(k=0; k<c1; ++k)
            {
result[i][j]+=a[i][k]*b[k][j];
            }

    // Displaying the result
printf("\nOutput Matrix:\n");     for(i=0;
i<r1; ++i)
        for(j=0; j<c2; ++j)
        {             printf("%d \t ",
result[i][j]);

        }
    return 0;
}
```

Slip8

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. [15 Marks]

```
#include<stdio.h> int
main()
{  int
w,x,y,z;
 printf("enter withdrow amount : ");
 scanf("%d",&w);
x=w/10;
 w=w%10;
y=w/5;
 w=w%5;
z=w;
 printf("note of 10 : %d\n",x);
printf("note of  5 : %d\n",y);
printf("note of  1 : %d\n",z); }
```

Q2. Write a menu driven program to perform the following operation on m*n Matrix [25 Marks]

1. Calculate sum of upper triangular matrix elements
2. Calculate sum of diagonal elements

```
#include <stdio.h>

void main()
{
    int fig_code;
    float side, base, length, breadth, height, area, radius;

    printf("------------------------\n");
printf(" 1 --> sum of upper\n");
printf(" 2 --> sum of dignola\n");
    printf("------------------------\n");
    int i, j, a[10][10], sum, rows, columns;

   printf("\nEnter the number of Rows : ");
scanf("%d", &rows);

   printf("\nEnter the number of Columns : ");
scanf("%d", &columns);
```

```
   //Accept the Elements in Matrix
for (i = 0; i < rows; i++)       for (j
= 0; j < columns; j++) {
        printf("\nEnter the Element a[%d][%d] : ", i, j);
scanf("%d", &a[i][j]);
     }


   printf("Enter the Figure code\n");

   scanf("%d", &fig_code);
   switch(fig_code)
   {

   case 1:
       sum = 0;         for (i = 0; i <
rows; i++)       for (j = 0; j <
columns; j++) {         // Condition for
Upper Triangle
        if (i < j) {            sum
= sum + a[i][j];
     }
    }
printf("sum of upper=%d",sum);
        break;
case 2: sum =
0;
   for (i = 0; i < rows; i++)       for (j =
0; j < columns; j++) {          //
Condition for Upper Triangle          if
(i == j) {
           sum = sum + a[i][j];
        }
     }
printf("sum of digonal=%d",sum);
break;

   default:         printf("Error in
figure code\n");         break;
   }
}
```

Slip 9

Q1. Write a C program to accept a character from the user and check whether the character is a vowel or consonant. [15 Marks]

```
#include <stdio.h> int
main()
{     char c;      int isLowercaseVowel,
isUppercaseVowel;
    printf("Enter an alphabet: ");      scanf("%c",&c);          isLowercaseVowel
= (c == 'a' || c == 'e' || c == 'i' || c == 'o' || c == 'u');          isUppercaseVowel
= (c == 'A' || c == 'E' || c == 'I' || c == 'O' || c == 'U');
    if (isLowercaseVowel || isUppercaseVowel)
        printf("%c is a vowel.", c);
else          printf("%c is a
consonant.", c);      return 0;
}
```

Q2. Write a program to accept two numbers as range and display multiplication table of all numbers within that range. [25 Marks]

```
#include <stdio.h> int
main()
{    int  i,j;
        for(j=1; j<=5; j++)
    {
        for(i=1; i<=10; i++)
{ //printf("\t ");
        printf(" \n %d * %d = %d ",j, i, j*i);
        }
printf("\n");
    }
    return 0;
}
```

Slip 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. [15 Marks]

```
#include <stdio.h>

void main()
{
    int x, y;
```

```
   printf("Enter the values for X and Y\n");     scanf("%d
%d", &x, &y);     if (x > 0 && y > 0)          printf("point (%d,
%d) lies in the First quandrant\n");     else if (x < 0 && y
> 0)
        printf("point (%d, %d) lies in the Second quandrant\n");
else if (x < 0 && y < 0)
        printf("point (%d, %d) lies in the Third quandrant\n");
else if (x > 0 && y < 0)
        printf("point (%d, %d) lies in the Fourth quandrant\n");
else if (x == 0 && y == 0)
        printf("point (%d, %d) lies at the origin\n");
}
```

Q2. Write a program, which accepts a number n and displays each digit in words. Example: 6702 Output = Six-Seven-Zero-Two [25 Marks]

```
#include<stdio.h> int
main()
{
int a,n=1,x,m=0,p;
printf("enter no :");
scanf("%d",&a); p=a;
while(p!=0)
 {
  p=p/10;
n=n*10;
   }
 while(a!=0)
 {
    n=n/10;
x=a%10;   a=a/10;
  m=m+(x*n);
 }
  while(m!=0)
 {
  x=m%10;
m=m/10;
   switch(x)
  {
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 -");
break;
     }
 }
}
```

Slip11

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 cp,sp,
amt;
```

```
   /* Input cost price and selling price of a product */
printf("Enter cost price: ");     scanf("%d", &cp);
printf("Enter selling price: ");     scanf("%d", &sp);

   if(sp > cp)
   {
       /* Calculate Profit */
amt = sp - cp;
       printf("Profit = %d", amt);
   }
   else if(cp > sp)
   {
       /* Calculate Loss */
 amt = cp - sp;
      printf("Loss = %d", amt);
  }
  else
  {
      /* Neither profit nor loss */
printf("No Profit No Loss."); }

   return 0; }
```

Q2. Accept radius from the user and write a program having menu with the following options and corresponding actions [25 Marks]

Options Actions

1. 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>

```
void main()
{
   int r,choice;
   float area,c,vol,PI= 3.142;


   printf("\n Enter the radius of circle:- ");
scanf("%d",&r);

   printf("\n Please make a choice from the following :");
   printf("\n \n Options:\t \t \t \t");     printf("Actions:");
printf("\n \n 1. Area of the circle :");     printf("\t
```

```
\tCompute area of the circle and print");     printf("\n \n
2. Circumference of the circle ");     printf("\tCompute
circumference of circle and print");
   printf("\n \n 3. Area of the sphere ");
   printf("\t \t       Compute volume of sphere and print \n \n ");
scanf("%d",&choice);

   switch(choice)
   {

   case 1:
   area=PI*r*r;     printf("\n The area of the circle is
%f \n \n",area);    break;

  case 2:    c=2*PI*r;    printf("\n The circumference of
the circle is %f \n \n",c);    break;
    case 3:
  vol=(4/3)*PI*r*r;
   printf("\n The volume of the sphere is %f \n \n",vol);
break;

   default:
   printf("\n You haven made invalid choice \n \n");

} }
```

Slip12

Q1. Write a C program to calculate sum of digits of a given input number.[15 Marks]

```
#include <stdio.h>

int main()
{
```

```
    int num, sum=0;

    /* Input a number from user */
    printf("Enter any number to find sum of its digit: ");
scanf("%d", &num);

    /* Repeat till num becomes 0 */
while(num!=0)
    {
        /* Find last digit of num and add to sum */
sum += num % 10;

       /* Remove last digit from num */
num = num / 10;
   }

   printf("Sum of digits = %d", sum);
    return 0;
}
```

Q2. Accept two numbers from user and write a menu driven program to perform the following operations [25 Marks]

1. swap the values of two variables
2. calculate arithmetic mean and harmonic mean of two numbers

```
    #include<stdio.h>
void main()
{     int
n1,n2,t,choice;

         float arithmetic_mean,harmonic_mean;

    printf("\n Enter the radius of circle:- ");
scanf("%d%d",&n1,&n2);

    printf("\n Please make a choice from the following :");
    printf("\n \n Options:\t \t \t \t");
printf("Actions:");
    printf("\n \n 1. SWap :");

    printf("\n \n 2. MEAN ");
```

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

   switch(choice)
   {

   case 1:
                t=n1;
n1=n2;                  n2=t;
       printf("\n swap=%d %d \n \n",n1,n2);
break;




   case 2:


     arithmetic_mean = (n1+n2) /2;
harmonic_mean = (n1*n2) / (n1+n2);
   printf("arithmetic mean = %f and harmonic mean =
%f",arithmetic_mean,harmonic_mean);
    break;

   default:
   printf("\n You haven made invalid choice \n \n");

} }
```

Slip13

Q1. Write a C program to accept the value of n and display sum of all odd numbers up to n. [15 Marks]

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

```
{     int i, n,
sum=0;
    /* Input range to find sum of odd numbers */
    printf("Enter upper limit: ");
    scanf("%d", &n);
    /* Find the sum of all odd number */
for(i=1; i<=n; i+=2)
    {
        sum += i;
    }
    printf("Sum of odd numbers = %d", sum);
return 0; }
```

Q2. Write a program to accept a decimal number and convert it to binary, octal and hexadecimal number. [25 Marks]

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

 int main(void)
{
   int num, choice,oct=0, base;
int  bin = 0;
    int i = 0, rem;
   char hex_arr[50];
         printf("Enter a number: ");
        scanf("%d", &num);


    while(1)
    {
        printf("Select conversion: \n\n");
printf("1. Decimal to binary. \n");
printf("2. Decimal to octal. \n");         printf("3.
Decimal to hexadecimal. \n");
printf("4. Exit. \n");

        printf("\nEnter your choice: ");
        scanf("%d", &choice);

        switch(choice)
```

```
      {            case
1:                base =
2;
            while(num != 0)
        {
      rem = num % 2;  // get the remainder
bin = rem * (long long)pow(10, i++) + bin;
num /= 2;  // get the quotient
    }

   printf("%lld", bin);
              break;
case 2:
base = 8;
while(num != 0)
   {
      rem = num % 8;  // get the last digit
oct = rem * (long long)pow(10, i++) + oct;
num /= 8;  // get the quotient
   }

   printf("0o");

   printf("%lld", oct);

            break;
         case 3:
             base = 16; while(num
!= 0)
   {
      rem = num % 16;  // get the right most digit

      if (rem < 10)
      {
         hex_arr[i++] = 48 + rem;
      }
else
      {
         hex_arr[i++] = 55 + rem;
      }
```

```
        num /= 16;  // get the quotient
    }

    printf("0x");

    for(int j = i - 1; j >= 0 ; j--)  // print the hex_arr in reverse order
    {
        printf("%c", hex_arr[j]);
    }
                break;
case 4:
printf("Exiting ...");
exit(1);            default:
                printf("Invalid choice.\n\n");
continue;
        }


    }

}
```

Slip14

Q1. Write a C program to check whether a input number is Armstrong number or not.

[15 Marks] #include <stdio.h> int main()

```
{
    int number, originalNumber, remainder, result = 0;

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

    originalNumber = number;

    while (originalNumber != 0)
    {
```

```
        remainder = originalNumber%10;
result += remainder*remainder*remainder;
originalNumber /= 10;
    }

    if(result == number)
        printf("%d is an Armstrong number.",number);
else
        printf("%d is not an Armstrong number.",number);

    return 0;
}
```

Q2. Write a program to accept a number and count number of even, odd and zero digits within that number. [25 Marks]

```
#include <stdio.h> int
main()
{
     int nodd,neven,num,digit,zero=0 ;
printf("Enter four digit number: ");
     scanf("%d",&num);
     while (num> 0)
     {
          digit = num % 10; /* separate LS digit from number */
num /= 10;
          if(digit != 0 && digit % 2 == 0)
          {
neven++;
          }            else
if(digit==0)
         {
               zero++;
          }
else
          {
nodd++;
          }
     }
     printf("\nOdd digit : %d \nEven digit : %d\nZeros : %d", nodd, neven,zero);
return 0;
}
```

Slip15

Q1. Write a C program to check whether a input number is perfect number of not.
[15 Marks]

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

Q2. Write a program having a menu with the following options and corresponding actions
[25 Marks]

Options 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>

void main()
{
   int fig_code;
   float side, base, length, breadth, height, area, radius;

   printf("------------------------\n");
printf(" 1 --> Rectangle\n");
printf(" 2 --> Triangle\n");     printf("
3 --> Square\n");
```

```
   printf("------------------------\n");
printf("Enter the Figure code\n");
scanf("%d", &fig_code);
   switch(fig_code)
   {

   case 1:
      printf("Enter the breadth and length\n");
scanf("%f %f", &breadth, &length);        area =
breadth * length;        printf("Area of a
Reactangle = %f\n", area);        break;    case
2:
      printf("Enter the base and height\n");
scanf("%f %f", &base, &height);        area =
0.5 * base * height;        printf("Area of a
Triangle = %f\n", area);        break;    case
3:
      printf("Enter the side\n");
scanf("%f", &side);        area = side * side;
printf("Area of a Square=%f\n", area);
break;    default:        printf("Error in
figure code\n");        break;
   }
}
```

Slip16

Q1. Write a C program to calculate xy without using standard library function. [15 Marks]

```
#include<stdio.h>
#include<conio.h>
void main()
{
 int x,y,i,r=1,t;
printf("Enter a number:");
scanf("%d",&x);
printf("Enter the power:");
scanf("%d",&y);
 for(i=1;i<=y;i++)
```

```
 {
t=x;
r=r*t;
 }
 printf("Result:%d",r);
getch();
}
```

Q2. Write a program to display union and intersection of two 1D array. [25 Marks]

```
#include<stdio.h>

int printIntersection(int arr1[], int arr2[], int m, int n)
{
  int i = 0, j = 0;
  while (i < m && j < n)
  {
    if (arr1[i] < arr2[j])
i++;     else if (arr2[j] <
arr1[i])       j++;
    else /* if arr1[i] == arr2[j] */
    {
      printf(" %d ", arr2[j++]);
i++;
    }
  }
}
  int main()
{
  int arr1[] = {1, 2, 4, 5, 6};   int
arr2[] = {2, 3, 5, 7};   int m =
sizeof(arr1)/sizeof(arr1[0]);   int n =
sizeof(arr2)/sizeof(arr2[0]);
printIntersection(arr1, arr2, m, n);
getchar();
  return 0;
}
```

Slip17

Q1. Write a C program to display multiplication table of a given input number [15 Marks]

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

```
num, i = 1;
printf("
   Enter any Number:");     scanf("%d",
&num);     printf("Multiplication table of %d:
", num);
       while (i <= 10) {
printf("
       %d x %d = %d", num, i, num * i);
i++;
   }
   return 0;
}
```

Q2. Write a menu driven program to perform the following operation on m*n Matrix [25 Marks]

1. Display transpose of a matrix
2. Calculate sum of all odd elements of matrix

```
#include <stdio.h>

void main()
{
   int a[10][10], transpose[10][10], r, c, i, j,sum=0, fig_code;
printf("Enter rows and columns of matrix: ");     scanf("%d
%d", &r, &c);

   // Storing elements of the matrix
printf("\nEnter elements of matrix:\n");
   for(i=0; i<r; ++i)
      for(j=0; j<c; ++j)
      {
         printf("Enter element a%d%d: ",i+1, j+1);
scanf("%d", &a[i][j]);
      }
   printf("-------------------------\n");
printf(" 1 --> Transpose\n");     printf(" 2 -
-> Sum of odd elements\n");     printf("---
----------------------\n");     printf("Enter the
Figure code\n");    scanf("%d",
&fig_code);
  switch(fig_code)
```

```
  {

  case 1:
      for(i=0; i<r; ++i)
      for(j=0; j<c; ++j)
      {           transpose[j][i]
= a[i][j];
      }
      printf("\nTranspose of Matrix:\n");
for(i=0; i<c; ++i)
      for(j=0; j<r; ++j)
      {
         printf("%d  ",transpose[i][j]);
         if(j==r-1)
printf("\n\n");
      }

      break;
case 2:
           for(i=0; i<r;
++i)
      for(j=0; j<c; ++j)
      {
if(a[i][j]%2!=0)
              sum=sum+a[i][j];

      }
      printf("\n sum of odd elements= %d",sum);
break;

   default:       printf("Error in
figure code\n");       break;
   }
}
```

Slip18

Q1. Write a C program to generate following triangle up to n lines. [15 Marks]

1

1 2

1 2 3

```
#include <stdio.h> int
main()
{     int i, j,
rows;

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

    for(i=1; i<=rows; ++i)
    {         for(j=1; j<=i;
++j)
        {
printf("%d ",j);
        }
        printf("\n");
    }
    return 0;
}
```

Q2. Write a program to calculate sum of following series up to n terms. [25 Marks]

Sum=X-X
2 /2!+X3
/3!-……

```
#include<math.h> #include<stdio.h>
    int fact(int index)
    {     int f =
1, i;
    for(i = 1; i <= index; i ++)
    {
        f = f*i;
    }
    return f;
    }
void main()
{    int x =
1;    int n =
3;
    double sum = 0,term=-1,    m;
```

```
   // Sum of n-1 terms starting from 2nd term
int i;
    for (i = 1; i <= n; i++) {

        term = term * (-1);     m =
term * pow(x, i) / fact(i);     sum
= sum + m;
    }
    printf("\n%.4f", sum);
getch(); }
```

(Note: Write separate user defined function to calculate power and factorial)

Slip19

Q1. Write a C program to generate following triangle up to n lines. [15 Marks]

```
* * * *
* * *
* *
*
#include <stdio.h> int
main()
{     int i, j,
rows;

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

    for(i=rows; i>=1; --i)
  {      for(j=1; j<=i;
  ++j)
        {
   printf("* ");
        }
        printf("\n");
    }
  return 0;
```

```
}
```

Q2. Write a menu driven program to perform the following operation on m*n Matrix [25 Marks]

1. Find sum of diagonal elements of matrix
2. Find sum of all even numbers of matrix

```
#include <stdio.h>

void main()
{
   int a[10][10], transpose[10][10], r, c, i, j,sum=0, fig_code;
printf("Enter rows and columns of matrix: ");     scanf("%d
%d", &r, &c);

   // Storing elements of the matrix
printf("\nEnter elements of matrix:\n");
   for(i=0; i<r; ++i)
       for(j=0; j<c; ++j)
       {
           printf("Enter element a%d%d: ",i+1, j+1);
scanf("%d", &a[i][j]);
       }
   printf("------------------------\n");     printf(" 1 -
-> sum of diagonal elements\n");
   printf(" 2 --> Sum of even elements\n");
printf("------------------------\n");     printf("Enter
the Figure code\n");     scanf("%d",
&fig_code);
   switch(fig_code)
   {

   case 1:
 for(i=0;i<r;i++)
   {
for(j=0;j<c;j++)
      {
  if(i==j)
          {
             sum=sum+a[i][j];
          }
```

```
        }
    }   printf("\n sum of digonal elements= %d",sum);
      break;   case
2:

       for(i=0; i<r; ++i)
      for(j=0; j<c; ++j)
       {
          if(a[i][j]%2==0)
               sum=sum+a[i][j];

       }
       printf("\n sum of even elements= %d",sum);
break;

   default:        printf("Error in
figure code\n");        break;
   }
}
```

Slip20

Q1. Write a C program to generate following triangle up to n lines. [15 Marks]

```
1
2 3
4 5 6
#include <stdio.h> int
main()
{
   int rows, i, j, number= 1;

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

   for(i=1; i <= rows; i++)
```

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

printf("\n");

   }

   return 0;
}
```

Q2. Write a program to calculate addition of two matrices [25 Marks]

```
#include<stdio.h>
void main()
{
       int a[2][2],b[2][2],c[2][2],i,j;         clrscr();
printf("Enter the value of First 2 x 2 Matrix : ");
for(i=0;i<2;i++)
          {
              for(j=0;j<2;j++)
                 {
                    scanf("%d",&a[i][j]);
                  }
          }
              printf("Enter the value of Second 2 x 2 Matrix : ");
for(i=0;i<2;i++)
                 {
for(j=0;j<2;j++)
                      {
scanf("%d",&b[i][j]);
                      }
}
                          for(i=0;i<2;i++)
                             {
for(j=0;j<2;j++)
                                    {
                                       c[i][j]=a[i][j]*b[i][j];
```

```
                printf("Sum of Two Matrix : %d\n",c[i][j]);
            }
}
getch();
}
```