22. Write a program to print the first 7 positive integers and their factorials. (The factorial of 1 is 1, the factorial of 2 is 1 * 2 = 2, the factorial of 3 is 1 * 2 * 3 = 6, the factorial of 4 is 1 * 2 * 3 * 4 = 24, etc.).

```
#include "stdio.h"
#include "conio.h"

void main(){
 clrscr();
 int fact;

 printf("\n\t\tFactorials.....\n");
 for(int i=1; i<=7; i++){
   fact=i;
   for(int j=i-1; j>0; j--)
     fact*=j;
   printf("%d! = %d\n",i,fact);
 }
getch();
}
```

24. Write a program that inputs one number consisting of five digits from the user; separates the number into its individual digits and prints the digits separated from one another by three spaces each. For example, if the user types in the number 42339.

```
#include "stdio.h"
#include "conio.h"

void main(){
```

```
clrscr();
long i;
int temp[5];

printf("Enter any five digit number: ");
scanf("%ld",&i);

temp[0]=i/10000;
i=i%10000;

temp[1]=i/1000;
i=i%1000;

temp[2]=i/100;
i=i%100;

temp[3]=i/10;
i=i%10;

temp[4]=i;

printf("\n\n");
for(int j=0; j<5; j++)
  printf("%d  ",temp[j]);

getch();
```

```
}
```

26. Write a program that inputs an integer containing only 0s and 1s (i.e., a "binary" integer) and print its decimal equivalent. (Hint: use the modulus and division operators to pick off the "binary" number's digits one at a time from right to left. Just as in the decimal number system where the rightmost digit has positional value of 1 and the next digit left has a positional value of 10, then 100, then 1000, etc., in the binary number system the rightmost digit has a positional value of 1, the next digit left has a positional value of 2, then 4, then 8, etc. Thus the decimal number 234 can be interpreted as 4 * 1 + 3 * 10 + 2 * 100. The decimal equivalent of binary 1101 is 1 * 1 + 0 * 2 + 1 * 4 + 1 * 8 or 1 + 0 + 4 + 8 or 13).

```
#include "stdio.h"
#include "conio.h"
#include "string.h"

void main(){
 clrscr();
 char binary[10];
 int decimal=0;
 int count=1;

 printf("Enter Binary number: ");
 gets(binary);

 int length = strlen(binary);

 for(int i=length-1; i>=0; i--){
   if(binary[i]=='1')
     decimal+=count;

   count+=count;
 }
   printf("\n\nDecimal value is: %d",decimal);

getch();
}
```

41. Write a function that compares two strings for the equality. It should return true if both strings are identical otherwise false.

```
#include "stdio.h"

#include "conio.h"
```

```
#include "string.h"

 int compare(char *phrase1, char *phrase2){
  int value = strcmp(phrase1,phrase2);

  if(value==0)
    return 1;
    //printf("\n\nPhrases are same");
  else
    return 0;
    //printf("\n\nPhrases are not same ");
 }

 void main(){
 clrscr();
 char phrase1[20];
 char phrase2[20];

 printf("Enter phrase1: ");
 gets(phrase1);

 printf("\n\nEnter phrase2: ");
 gets(phrase2);

 int value = compare(phrase1, phrase2);
```

```
if(value==1)
  printf("\n\nPhrases are same");
else
  printf("\n\nPhrases are not same ");

getch();
}
```

42. Write a function which returns true if given number is a prime.

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

int prime(int n){
   int a=0;
   for(int j=1; j<=n; j++)
     if(n%j==0)
       a+=1;

   if(a==2)
     return 1;

 return 0;
}

void main(){
 clrscr();
 int a, prime_no;

  printf("\t\tPRIME NUMBER");

  printf("\n\nEnter any number: ");
  scanf("%d",&a);

  prime_no = prime(a);
```

```
  if(prime_no>0)
    printf("\n\n%d is a Prime number",a);
  else
    printf("\n\n%d is a not a Prime number",a);

 getche();

}
```

43. Write a function which sorts the given array in ascending/descending order.

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


 void sort(int *A){

  int b;

  printf("\nBefore Sorting\n\n");

  for(int j=0; j<5; j++)
    printf("A[%d] = %d\n",j,A[j]);

   printf("\n\n");
   for(int i=1; i<=5; i++)
     for(j=0; j<5-1; j++){
       if(A[j+1]<A[j]){
          b=A[j];
          A[j]=A[j+1];
          A[j+1]=b;
       }           // End of if
     }     // End of Inner for

   printf("\nAfter Ascending Sort\n\n");
   for(j=0; j<5; j++)
     printf("A[%d] = %d\n",j,A[j]);


   printf("\n\n");
   for(i=1; i<=5; i++)
     for(j=0; j<5-1; j++){
       if(A[j+1]>A[j]){
          b=A[j];
```

```
          A[j]=A[j+1];
          A[j+1]=b;
       }          // End of if
     }     // End of Inner for

   printf("\nAfter Descending Sort\n\n");
   for(j=0; j<5; j++)
     printf("A[%d] = %d\n",j,A[j]);

}


void main () {
                        // ASCENDING AND DESCENDING SORTING
clrscr();

int A[10];
int b;

printf("\t\tSORTING PROGRAM");

printf("\n\nEnter 5 values:\n");
for(int i=0; i<5; i++){
  printf("A[%d] = ",i);
  scanf("%d",&A[i]);
}

sort(A);

getche();

}
```

44. Write a function which returns true if given integer is palindrome.

```
#include "stdio.h"
#include "conio.h"
#include "string.h"

 int palindrome(char *strn){

  int flag = 1;
  int j = (strlen(strn)-1);
```

```
 for(int i = 0; i<=(strlen(strn)/2); j--, i++){
   if(strn[i] != strn[j]){
     flag = 0;
     break;
   }
 }

 if(flag)
   return 1;
 else
   return 0;

}


void main(){
clrscr();
char strn[20];

printf("Enter any Integer: ");
gets(strn);

int value = palindrome(strn);

if(value==1)
  printf("Given String is Palindrome...");
else
  printf("Given String is not Palindrome...");

getch();
}
```

47. Write a function which prints the Fibonacci series for given the input.

```
#include "stdio.h"
#include "conio.h"
#include "string.h"

 int fibonacci(int n){

  int a=n,b=0,i;

   printf("\nFibonacci Series for the given number is:\n\n");
   for(i=1; i<=10; i++){
```

```
    a=a+b;
    b=a-b;
    printf(" %d ",b);
  }
}


void main(){
 clrscr();
 int number;

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

 fibonacci(number);

 getch();
}
```

48. Write a function which takes a binary number as an input and returns its equivalent decimal number.

```
#include "stdio.h"
#include "conio.h"
#include "string.h"

int BinToDec(char *binary){
 int decimal=0;
 int count=1;

 int length = strlen(binary);

 for(int i=length-1; i>=0; i--){
   if(binary[i]=='1')
     decimal+=count;

   count+=count;
 }
   printf("\n\nDecimal value is: %d",decimal);
}


void main(){
 clrscr();
```

```
 char binary[10];

 printf("Enter Binary number: ");
 gets(binary);

 BinToDec(binary);

getch();
}
```

51. Write a function which takes a decimal number as an input and returns its equivalent binary number.

```
#include "stdio.h"
#include "conio.h"
#include "string.h"

 int DecToBin(int decimal){
  int count;
  int bin[9];

  for(int i=8;i>=0;i--) {
    bin[i]=(decimal%2);
    decimal=(decimal/2);
  }

  printf("\n\nDecimal to binary is: ");
  for(i=0;i<=8;i++)
    printf(" %d",bin[i]);
 }


void main(){
 clrscr();

 int decimal;

 printf("Enter any decimal value: ");
 scanf("%d",&decimal);

 DecToBin(decimal);

getch();
}
```

52. Write a function which converts given string into uppercase.

```
#include "stdio.h"
#include "conio.h"
#include "string.h"

 int upper(char *phrase){

 strupr(phrase);
 printf("\n\n%s",phrase);
 }


void main(){
 clrscr();

 char phrase[20];

 printf("Enter any phrase: ");
 gets(phrase);

 upper(phrase);
getch();
}
```

53. Write a function which converts given string into lowercase.

```
#include "stdio.h"
#include "conio.h"
#include "string.h"

 int lower(char *phrase){

 strlwr(phrase);
 printf("\n\n%s",phrase);
 }


void main(){
 clrscr();

 char phrase[20];
```

```
 printf("Enter any phrase: ");
 gets(phrase);

 lower(phrase);
getch();
}
```

55. Write a function which counts and returns the total number of characters in the given string.

```
#include "stdio.h"
#include "conio.h"

void main(){
 clrscr();

 int count=-1;
 char ch='a';

 printf("Enter any charater: ");

 while((ch!='\r')){
   ch=getche();
   count++;
 }
   printf("\n\nchar count is %d",count);
 getch();
}
```

58. Write a function which takes your name as an input and prints it in a box.

Enter your Name: Mehran University


```
#include "stdio.h"
#include "conio.h"

void box();

void main(){
 clrscr();

 box();

 printf("\n\xdb                \xdb");
```

```
 printf("\n\xdbMEHRAN UNIVERSITY\xdb\n");
 printf("\xdb                \xdb\n");

 box();
 getch();
}

void box(){
 int a;

 for(a=0; a<=18; a++)
   printf("\xdb");

}
```

59. Write a function which takes an integer as an input and print each digit of the given integer separated by one or more spaces.

```
#include "stdio.h"
#include "conio.h"


void numbers(){
 long i;
 int temp[5];

 printf("Enter any five digit number: ");
 scanf("%ld",&i);

 temp[0]=i/10000;
 i=i%10000;

 temp[1]=i/1000;
 i=i%1000;

 temp[2]=i/100;
 i=i%100;

 temp[3]=i/10;
 i=i%10;

 temp[4]=i;

 printf("\n\n");
```

```
 for(int j=0; j<5; j++)
   printf("%d  ",temp[j]);

}

void main(){
 clrscr();

 numbers();
getch();
}
```

60. Write a function which takes an integer as input and prints its factorial series.

```
#include "stdio.h"
 #include "conio.h"

 void factorial(int number){
  long ans;

  ans=1;

  while (number>0)
    ans=ans*number--;
  printf("\nFactorial is: %ld\n",ans);

 }

 void main () {
  clrscr();
  int number;

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

  factorial(number);

  getch();

 } // End of main
```

61. Write a program using array that asks user to input any 10 numbers; the program then sorts the numbers in ascending order and displays the sorted numbers.

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


 void main () {
                        // ASCENDING AND DESCENDING SORTING
 clrscr();

 int A[10];
 int b;

 printf("\t\tSORTING PROGRAM");

 printf("\n\nEnter 10 values:\n");
 for(int i=0; i<10; i++){
   printf("A[%d] = ",i);
   scanf("%d",&A[i]);
 }

 printf("\nBefore Sorting\n\n");

 for(int j=0; j<10; j++)
   printf("A[%d] = %d\n",j,A[j]);

 printf("\n\n");
 for(i=1; i<=10; i++)
   for(j=0; j<10-1; j++){
     if(A[j+1]<A[j]){
       b=A[j];
       A[j]=A[j+1];
       A[j+1]=b;
     }              // End of if
   }      // End of Inner for

 printf("\nAfter Ascending Sort\n\n");
 for(j=0; j<10; j++)
   printf("A[%d] = %d\n",j,A[j]);

 getche();

 }
```

62. Write a C program that gets 10 numbers entered by the user. The program also asks the user to give any number to find it in the array, and passes the array and the

number (that is to be found) to a function as argument; the function displays the result that whether number found or not.

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


 void search(int *A, int search){

 int b=1;

 for(int i=0; i<10;i++){
   if(A[i]==search){
     printf("\nYour Element : %d is found on Array Location: %d\n",search,i);
     b=0;
   }
 }//end outer

 if(b)
   printf("\nYour Element : %d not found in Array\n",search);

 }


 void main () {
                          // ARRAY SEARCHING
 clrscr();

 int A[10];
 int number;

 printf("\t\tSEARCHING PROGRAM");

 printf("\n\nEnter 10 values:\n");
 for(int i=0; i<10; i++){
   printf("A[%d] = ",i);
   scanf("%d",&A[i]);
 }

 printf("\n\nEnter any value to search in array: ");
 scanf("%d",&number);

 search(A,number);
```

```
 getche();

 }
```

63. Write a program that gets time in hours, minutes and seconds from the user; convert the time into seconds using function. The function takes hours, minutes and seconds as arguments and returns the time in seconds.

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

 void seconds(int hr,int min,int sec){

  long secs;

  secs = ((hr*60*60)+(min*60)+sec);

  printf("\n\nTime: %d:%d:%d",hr,min,sec);
  printf("\n\nThe entered time in seconds is %ld",secs);

 }


 void main () {
  clrscr();

  int hr,min,sec;

 printf("\n\nEnter time: ");

 printf("\n\nEnter Hr: ");
 scanf("%d",&hr);

 printf("\n\nEnter Min: ");
 scanf("%d",&min);

 printf("\n\nEnter Sec: ");
 scanf("%d",&sec);

 seconds(hr,min,sec);

 getch();
}
```

64. Write a program that gets user name (in an array), then swaps the entered name using two functions one for getting input and other for swapping the name. For example if user enters NAEEM, the swap function reverses the letters to MEEAN.

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


 void main () {
  clrscr();

  char name[20];

 printf("\nEnter Name: ");
 gets(name);

 strrev(name);
 puts(name);

 getch();
 }
```

65. Write a program that asks user to enter two fractions say a/b and c/d; and then displays the sum in fractional form. For example: Enter First Fraction: 1/2, Enter Second Fraction:2/5, Sum = 9/10

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

 void main () {
 clrscr();
 int a,b,c,d,e,f,g;

 printf("Enter two fraction numbers(a/b,c/d): ");
scanf("%d/%d,%d/%d",&a,&b,&c,&d);

e=b*d;
f=e/b;
g=e/d;

printf("\n\nThe sum of %d/%d and %d/%d is: %d/%d",a,b,c,d,(a*f+c*g),e);
```

```
 getch();
}
```

66. Write a program using array that gets 10 numbers from the user. This program calculates the average of those numbers. Use function that computes the average of those numbers and return the average value.

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


void main () {
 clrscr();

 int A[10],sum=0;

 printf("\nEnter Nos:\n");

 for(int i=0; i<10; i++){
    printf("A[%d] = ",i);
    scanf("%d",&A[i]);
    sum+=A[i];
 }

 float ave = sum/10;
 printf("\n\nThe average is %.1f",ave);
getch();
}
```

67. Create a structure called volume that uses three variables of type Distance (structure) to model the volume of a room. Initialize a variable of type volume to specific dimensions, and then calculate the volume it represent and print out the result.

```
#include <conio.h>
#include <stdio.h>
struct Volume{
float x, y, z;
};

void main () {
 clrscr();

 Volume distance;
```

```
distance.x=2.5;
distance.y=8.9;
distance.z=5.5;

float volume = (distance.x*distance.y*distance.z);
printf("The volume of a room is %.1f",volume);

getch();
}
```

68. Create a structure a type date that contains three members: the day, the month, the year, all of type int. Here the user enter a date in the format 10/9/2007, store it in a variable of type date, then retrieve the value form the variable and print them out in the same format.

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

struct Date{
int date;
}day,month,year;

void main () {
clrscr();

printf("Enter date:\n\n");
printf("Day: ");
scanf("%d",&day.date);
printf("Month: ");
scanf("%d",&month.date);
printf("Year: ");
scanf("%d",&year.date);

printf("\n\nDate: %d/%d/%d",day.date,month.date,year.date);

getch();
}
```

69. Create a structure called time. Its three members, all of type int, should be called hours, minutes, and seconds. Write a program that prompts the user to enter a time value in hours, minutes, and seconds. This can be in 12:30:50 format. The program

then stores the time in a variable of type time, and finally prints out the total number of seconds.

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

struct Time{
int time;
}hr,min,secs;

void main () {
 clrscr();

 printf("Enter time:");
 scanf("%d:%d:%d",&hr.time,&min.time,&secs.time);

 long seconds = (hr.time*60*60)+(min.time*60)+(secs.time);
 printf("\n\nTime: %d:%d:%d",hr.time,min.time,secs.time);
 printf("\n\nTime in seconds: %ld",seconds);

 getch();
}
```

70. Write a program that calculates the number of possible arguments for any number of guests and any number of chairs. (Assume there will never be fewer guests than chairs). A simple for loop should do it. For example the possible arrangement of six guests in four chairs is 360.

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

void main () {
 clrscr();
int guests, chairs, fact=1;

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

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

int n = guests-chairs;
fact=guests;
```

```
 for(int i=guests-1; i>n; i--)
    fact = (fact*i);
 printf("\n\nThe possible arrangement of %d guests in %d chairs is %d",guests,chairs,fact);

 getch();
}
```

71. Write a program that stores the numerator and denominator of two numbers in fraction, after adding them the result is also stored into fraction format. Use structure fraction to store these numbers and their result. (Both numerator and denominator should be of type int).

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

struct fraction{
int a,b,c,d,e,f,g;
}num;

void main () {
 clrscr();

 printf("Enter two fraction numbers(a/b,c/d): ");
 scanf("%d/%d,%d/%d",&num.a,&num.b,&num.c,&num.d);

 num.e=num.b*num.d;
 num.f=num.e/num.b;
 num.g=num.e/num.d;

 printf("\n\nThe sum of %d/%d and %d/%d is:
 %d/%d",num.a,num.b,num.c,num.d,(num.a*num.f+num.c*num.g),num.e);

 getch();
}
```