# BCA
# I SEMESTER
# C PROGRAMMING LAB MANNUAL

**CLASS: I SEM BCA 'C' SECTION**
**BATCH: 24-BATCH**
**SUBJECT: C PROGRAMMING LAB**
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//PROGRAM 1: Write a C Program to find area and circumference of circle.

```
#include<stdio.h>
#include<conio.h>
#define Pi 3.147
void main()
{
  float r,area=0,cir=0;
  clrscr();
 printf("enter the radius\n");
 scanf("%f",&r);
 area=Pi*r*r;
 cir=2*Pi*r;
 printf("the area of circle is %f\n",area);
 printf("the circumference of the circle is %f\n",cir);
 getch();
}
```

```
enter the radius
3
the area of circle is 28.323000
the circumference of the circle is 18.882000
```

// PROGRAM 3 Write a C program to check whether the number is prime or not.

```
#include <stdio.h>
#include<conio.h>
#include <math.h>
#include<process.h>
void main()
{
```

```
    int n, i, c = 0;
    clrscr();
    printf("Enter any number: ");
    scanf("%d", &n);
     if (n == 1)
     {
          printf("1  is not a Prime number");
          exit(0);   //terminates the program
     }

  for (i = 2; i <= sqrt(n); i++)
  {
          if (n % i == 0)
          {
             c++;
             break;
          }
     }        //end for

    if (c == 0)
       printf("%d is a Prime number\n", n);
    else
       printf("%d is not a Prime number\n", n);

    getch();
  }  //end of main
```

```
Enter any number: 3
3 is a Prime number.
Enter any number: 8
8 is not a Prime number.
Enter any number: 2
2 is a Prime number.
```

```
// PRG 4 - WAP To read a number, reverse the number and check it for palindrome
#include<stdio.h>
#include<conio.h>
void main()
{
   int num, org , rev= 0, rem;
   clrscr();
   printf("Enter a number: ");
   scanf("%d", &num);
   org = num;  // Store the original number
   while (num != 0)   // Reverse the number
   {
```

```
    rem = num % 10;          // Get the last digit
    rev = rev * 10 + rem;    // Build the reversed number
    num = num / 10;          // Remove the last digit
  }
  if (org == rev)
      printf("%d is a palindrome",org);
  else
    printf("%d is not a palindrome",org);

  getch();
}
```

```
 Enter a number TO REVERSE
1234
1234 is not a palindrome
 Enter a number TO REVERSE
1221
1221 is a palindrome
```

```
//PROGRAM 5 - To read two numbers and perform GCD
#include<stdio.h>
#include<conio.h>
void main()
{
  int a,b,rem;
  printf("enter any two numbers:");
  scanf("%d%d",&a,&b);
  while(b!=0)
  {
    rem=a % b;
    a=b;
    b=rem;
  }
  printf("GCD of two numbers is:%d",a);
  getch();
}
```

```
 enter any two numbers:
1
2
GCD of two numbers is:1
 enter any two numbers:
4
6
GCD of two numbers is:2
 enter any two numbers:
2
3
GCD of two numbers is:1_
```

```
//PROGRAM 6 - To find Sum of 'N' natural numbers
//example:  if n=4  then (1+2+3+4)  = 10
#include<stdio.h>
#include<conio.h>
void main()
{
   int num, i, sum = 0;
   printf(" Enter a positive number: ");
   scanf("%d", &num);

   for (i = 0; i <= num; i++)
   {
      sum = sum + i;
   }
   printf("\n Sum is %d",sum);
  getch();
}
```

```
C:\TURBOC3\BIN>TC
 Enter a positive number: 4

 Sum is 10
```

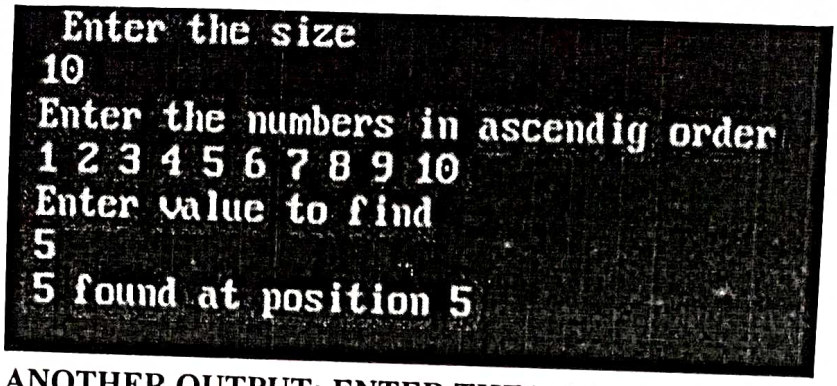
```
//PRG 7 - To read percentage of marks and to display appropriate message (Demonstration of
else-if ladder.
#include<stdio.h>
#include<conio.h>
void main()
{
  float percent;
  printf("Enter the percentage of marks: ");
  scanf("%f", &percent);

  // Validate the input and determine the grade
  if (percent < 0 || percent > 100)
       printf("Please enter a percentage between 0 and 100.\n");
else if (percent >= 75)
     printf("DISTINCTION\n");
else if (percent >= 60)
    printf("FIRST CLASS\n");
else if (percent >= 50)
    printf("SECOND CLASS\n");
else if (percent >= 40)
    printf("PASS CLASS\n");
else
    printf("Fail\n");
```

```
    getch();
}
```

```
C:\TURBOC3\BIN>TC
Enter the percentage of marks: 70
FIRST CLASS
Enter the percentage of marks: 90
DISTINCTION
Enter the percentage of marks: 30
Fail
```

```
//PRG8 - To perform binary search operation
#include<stdio.h>
#include<conio.h>
void main()
{
 int i, first, last, mid, n, search, a[20];
 printf("Enter the size\n");
 scanf("%d", &n);
 printf("Enter the numbers in ascendig order");
 for (i = 0; i < n; i++)
  scanf("%d", &a[i]);

 printf("Enter value to find\n");
 scanf("%d", &search);

 first = 0;
 last = n - 1;
 mid = (first+last)/2;

 while (first <= last)
 {
  if (a[mid] < search)
   first = mid + 1;
  else if (a[mid] == search)
  {
   printf("%d found at position %d \n", search, mid+1);
   break;
  }
 else
   last = mid - 1;

  mid = (first + last)/2;
 }
 if (first > last)
```

```
    printf("Not found");
   getch();
  }
```




**ANOTHER OUTPUT: ENTER THE VALUE TO FIND 20**
**20 NOT FOUND**

```
//PRG9 - To perform bubble sort operation
#include <stdio.h>
#include <conio.h>

void main()
{
   int a[20],n,i,j,temp;
   clrscr();
   printf("Enter the size");
   scanf("%d",&n);
   printf("ENTER NUMBERS IN UNSORTED ORDER \n");
   for ( i = 0; i < n; i++)
        scanf("%d", &a[i]);

   //sorting procedure
   for (i = 0; i < n - 1; i++)
   {
    for (j = 0; j < n - i - 1; j++)
    {
         if (a[j] > a[j + 1])
         {       temp = a[j];
                 a[j] = a[j + 1];
                 a[j + 1] = temp;

         }
    }
  }

printf("SORTED ARRAY IS \n");
for (i = 0; i < n; i++)
        printf("%d \t", a[i]);
```

getch();
}

```
Enter the size
5
ENTER NUMBERS IN UNSORTED ORDER
5
4
3
2
33
SORTED ARRAY IS
2       3       4       5       33
```

PRG 10 - To find the length of a string without using built in function

```
#include<stdio.h>
#include<conio.h>
void main()
{
   char string[50];
   int i, length = 0;
   clrscr();
   // input the string
   printf("Enter the string: \n");
   gets(string);

   //  keep going through each character of the string till its end
   for (i = 0; string[i] != '\0'; i++)
   {
      length++;
   }
   printf("length of %s = %d\n", string, length);
   getch();
}
```

```
C:\TURBOC3\BIN>TC
Enter the string:
presidency
length of presidency = 10
Enter the string:
presidency college
length of presidency college = 18
```

//prg 11 - To demonstrate string functions

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

```
    char str1[20] = "Hello";
    char str2[20] = "Welcome";
    char str3[20];
    int x;
    clrscr();
    // 1. strlen-length of a string
    printf("Length of str1: %d\n", strlen(str1));
    printf("Length of str2: %d\n", strlen(str2));
    // 2. strcpy- Copy one string to another
    strcpy(str3, str1);
    printf("After strcpy: %s\n", str3);
    // 3. strcat- Concatenate two strings
    strcat(str3, str2);
    printf("after strcat: %s\n", str3);
    //4.  Compare and print
    printf("COMPARE STRINGS \n");
     x=strcmp(str1, str2);
     if(x==0)
           printf("strings are equal");
     else
          printf("strings are not eqaul");
getch();
}
```

```
Length of str1: 5
Length of str2: 7
After strcpy: Hello
after strcat: HelloWelcome
COMPARE STRINGS
strings are not eqaul_
```

//PROGRAM 12: To read, display and add two m x n matrices using functions.

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

int r,c;

//ADD 2 MATRICES
void add(int a[][10], int b[][10], int sum[][10])
{
 int i, j;
 for (i = 0; i < r; i++)
    for (j = 0; j < c; j++)
          sum[i][j] = a[i][j] + b[i][j];
}
```

```
void main()
{
        int a[10][10], b[10][10],sum[10][10], i, j;
        clrscr();
        printf("Enter the no of rows and columns");
        scanf("%d%d",&r,&c);
        printf("Enter the first matrix values\n");
        for (i = 0; i<r; i++)
            for (j = 0; j<c; j++)
                scanf("%d",&a[i][j]);

        printf("Enter the second matrix values\n");
        for (i = 0; i < r; i++)
          for (j = 0; j < c; j++)
            scanf("%d",&b[i][j]);

        add(a,b,sum);   // call the function
        printf("ADDITION IS\n");
        for (i = 0; i < r; i++)
        {
          for (j = 0; j < c; j++)
          {
            printf("%5d",sum[i][j]);
          }
        printf("\n");
        }
 getch();
}
```

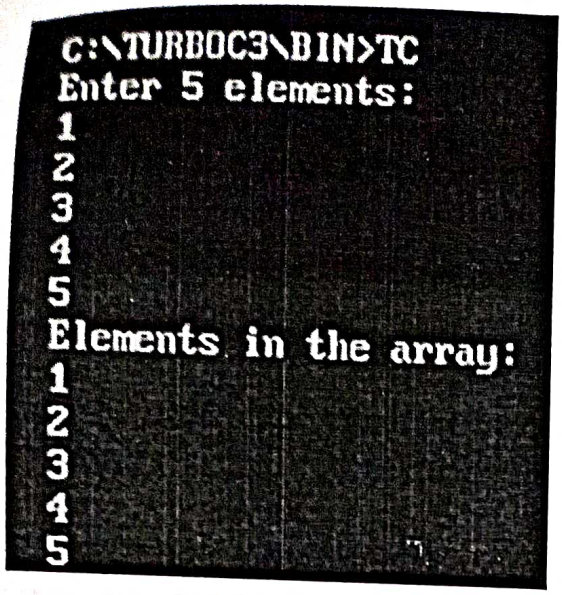
```
Enter the no of rows and columns
2
2
Enter the first matrix values
2
2
2
2
Enter the second matrix values
2
2
2
2
ADDITION IS
    4    4
    4    4
```

```
//program 13  To Swap Two Numbers using Pointers
#include<stdio.h>
#include<conio.h>
void main()
```

```
{
    int x, y, temp;
    int *a, *b;
    a = &x;
    b = &y;
    printf("enter two numbers: ");
    scanf("%d %d", &x, &y);
    printf("before swap: x = %d, y = %d\n", x, y);
    temp = *a;
    *a = *b;
    *b = temp;
    printf("after swap: x = %d, y = %d\n", x, y);
    getch();
}
```

```
enter two numbers: 2
3
before swap: x = 2, y = 3
after swap: x = 3, y = 2
```

```
//Program 14
//To insert 5 elements into an array and print the elements of the array
#include<stdio.h>
#include<conio.h>
void main()
{
   int array[5]; // Declare an array to hold 5 integers
   int i;
   // Insert 5 elements into the array
   printf("Enter 5 elements \n");

   for (i = 0; i < 5; i++)
   {
     scanf("%d", &array[i]);
   }
   // Print the elements of the array
   printf("Elements in the array:\n");
   for (i = 0; i < 5; i++)
   {
        printf("%d\n", array[i]);
   }
   getch();
}
```




```
//program 15
//To read marks scored by n students and find the total and average of marks
//(Demonstration of single dimensional array).
#include<stdio.h>
#include<conio.h>

void main()
{
   int n,i;
   float marks[20];
   float tot = 0.0;
   float avg;
   clrscr();
   printf("Enter the number of students: ");
   scanf("%d", &n);
  printf("Enter the marks for %d students:\n", n);
   for ( i = 0; i < n; i++)
   {
         scanf("%f", &marks[i]);
         tot = tot + marks[i];
   }
  avg = tot / n;
  printf("Total marks %.2f \t Average %.2f ", tot,avg);
  getch();
}
```

```
Enter the number of students: 5
Enter the marks for 5 students:
90
80
70
100
60
Total marks 400.00        Average 80.00
```

16. To find the sum of all elements of 1-Dimensional array using pointers.

```
#include<stdio.h>
#include<conio.h>
void main()
{
   int array[20],i,n,sum=0;
   int *ptr = array;
   clrscr();
   printf("Enter the size");
   scanf("%d", &n);
   printf("Enter the elements \n");
   for ( i = 0; i < n; i++)
        scanf("%d", ptr + i); // Using pointer arithmetic to store the value

   // Calculate the sum using pointers
   for ( i = 0; i < n; i++)
   {
        sum = sum +  *(ptr + i);
   }
   // Print the result
   printf("The sum is %d", sum);
   getch();
}
```

```
Enter the size 5
Enter the elements
1
2
3
4
5
The sum is 15_
```