SNS College of Technology, Coimbatore-35.
(Autonomous)
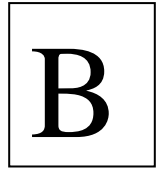**B.E/B.Tech- Internal Assessment -II**
Academic Year 2023-2024(EVEN)
Second Semester (Regulation R2023)
23ITT101 – PROGRAMMING IN C AND DATA STRUCTURES
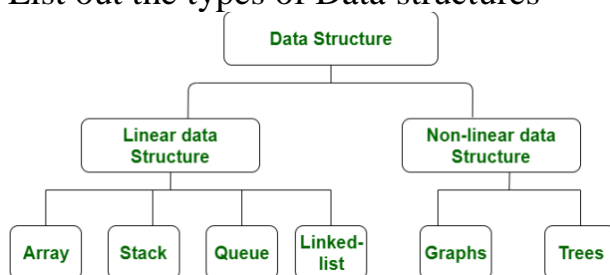**Common to Aero, Auto, Agri, Mech, FT, MCT, Civil**
Answer Key

B

Time: 1¹ᐟ² Hours   **Maximum Marks: 50**
Answer All Questions

PART A — (5 x 2 = 10 Marks)

1. Define function and its types of arguments.   CO2   REM
   A function is a set of statements enclosed within curly brackets
   ({}) that take inputs, do the computation, and provide the
   resultant output
   Actual Arguments and Formal Arguments

2. Write the syntax for function declaration. Give an example.   CO2   APP

3. Differentiate array and structure.   CO3   ANA
   Array refers to a collection consisting of elements of
   homogeneous data type. Structure refers to a collection consisting
   of elements of heterogeneous data type

4. Define data structure.   CO3   UND
   A data structure is a way of organizing and storing data in a
   computer so that it can be accessed and used efficiently.

5. List out the types of Data structures   CO3   REM

PART B — (2 x 13 = 26 Marks & 1 x 14 = 14 Marks)

6. (a) Write a C program to add 2 numbers by using with argument with return type method and with argument, without return type method

With arguments and with return value

```
void main()
{
        int a=6,b=7,c;
        c=add(a,b);
        printf("%d",c);
        getch();
}
int add(int i,int j)
{
        int k;
        k=i+j;
        return(k);
}
```

CO2   APP   13

with arguments and no return value

```
void main()
{
        int a=6,b=7;
        add(a,b);
        getch();
}
add(int i,int j)
{
        int k;
        k=i+j;
        printf("%d",k);
}
```

(OR)

(b) Write a C Program to Search a given number in the given array.

Searching an Element in given Array

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a[5],i,k;
printf("\nEnter the array Element");
for(i=0;i<5;i++)
scanf("%d",&a[i]);
```

```
printf("\n Enter the element to search");
scanf("%d",&k);
printf("\n ...Searching...");
for(i=0;i<5;i++)
{
if(k==a[i])
{
printf("\n Element found at %d position",i+1);
exit(0);
}
}
printf("\n Element not found");
}
```
CO3   APP   13

7. (a) Explain briefly about the concept of one dimensional array
with declaration and initialization with an example

The collection of data items can be stored under a one variable name
using only one subscript such a variable is called one dimensional array.

Syntax:
datatype arrayname[Size];
Example:
int num[5];

One Dimensional array Initialization
After an array is declared its elements must be initialized .Otherwise it
will contains an garbage values.
The array can be initialized by 2 stages
- ✓ At Compile time
- ✓ At Run time
- ➢ **At Compile time Initialization Syntax:**
datatype arrayname[Size]={list of values};
- ➢ **At Run time Initialization**
Arrays cane be explicitly initialized at run time. Usually applied for
larger arrays

CO3   UND   13

1.Sum of Array Elements

```
#include<stdio.h>
#include<conio.h>
int main()
{
int i,sum=0,arr[5];
printf("Enter Array Elements");
for(i=0;i<5;i++)
{
scanf("%d",&arr[i]);
}
for(i=0;i<5;i++)
{
sum=sum+arr[i];
}
printf("Sum of Array of Elements%d",sum);
}
```

(OR)

(b) Given an array of size 5, the task is to sort this array in ascending order in C.   CO3   APP   13

Example: Input: arr[] ={63, 23,14, 12, 9}

Output: {9,12,14, 23,63}

Sorting the elements in given Array

```c
#include<stdio.h>
#include<conio.h>
void main()
{
int i,j,n,a[10],temp;
clrscr();
printf("Enter the Number of Elements:\n");
scanf("%d",&n);
printf("Enter the Elements\n");
for(i=0;i<n;i++)
{
scanf("%d",&a[i]);
}
for(i=0;i<n;i++)
{
for(j=0;j<n;j++)
{
if(a[i]<a[j])
{
temp=a[i];
a[i]=a[j];
a[j]=temp;
}
}
}
printf("Elements Sorted in Ascending Order\n");
for(i=0;i<n;i++)
{
printf("%d\n",a[i]);
}
}
```

8. (a) Construct the c program for swapping 2 numbers with temporary variable using call by reference method with sample output

Call by reference

```c
#include<stdio.h>
#include<conio.h>
void swap(int*,int*);
void main()
{
```

```
printf("%d %d",a,b);
swap(&a,&b);
printf("after swap% d %d",a,b);
}
void swap(int* x,int* y)
{
int temp=*x;
*x=*y;
*y=temp;
printf("%d %d",*x,*y);
}
```

CO2   APP   14

<div align="center">

(OR)

</div>

(b) Construct a program to display students name, mark for 5
subjects, average of marks and grade using structure

```c
#include <stdio.h>
struct student {
    char name[50];
    int roll;
    float marks;
} s;

int main() {
    printf("Enter information:\n");
    printf("Enter name: ");
    fgets(s.name, sizeof(s.name), stdin);

    printf("Enter roll number: ");
    scanf("%d", &s.roll);
    printf("Enter marks: ");
    scanf("%f", &s.marks);

    printf("Displaying Information:\n");
    printf("Name: ");
    printf("%s", s.name);
    printf("Roll number: %d\n", s.roll);
    printf("Marks: %.1f\n", s.marks);

    return 0;
}
```

CO3   APP   14

<div align="center">

****

(Note: Und-Understand   Rem-Remember   Ana-Analyze   App-Apply)

</div>

Prepared By   **Verified By**   **HoD**