LAB ASSIGNMENT 11

1. Fibonacci / Factorial: Develop functions to compute factorial n, and the Fibonacci series till n terms using iteration.

Fibonacci

```
#include <stdio.h>


int fibonacci(int n){
   int fib[25], i;


   if(n==1)
   printf("The Fibonacci series is: 0");


   else if(n==2)
   printf("The Fibonacci series is: 0, 1");


   else{
   fib[0]=0;
   fib[1]=1;
   printf("%d, %d", fib[0], fib[1]);
   for(i=2; i<n; i++){


      fib[i]=fib[i-1] + fib[i-2];
```

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```
        printf(", %d",fib[i]);
    }
    }
    return fib[i];
}

int main()
{
    int N=0;

    printf("Enter number of terms in Fibonacci series: ");
    scanf("%d", &N);

    printf("The Fibonacci series is: ");
    fibonacci(N);

    return 0;
}
```

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Factorial

```
#include <stdio.h>

int fact(int n){
    int i=1;
    long int f=1;

   if(n==0)
   printf("%ld",f);

   else{
      for(i=1;i<=n;i++){
      f=f*i;
      }
      printf("%ld\n",f);
   }

}

int main()
{
   int num;

   printf("Enter number: ");
```

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

    if(num<0)
    printf("Factorial of negative number does not exist");

    else
    printf("Factorial of %d is ",num);
    fact(num);

    return 0;
}
```

2. Second Largest: Design a function that finds the second largest given 5 numbers into a function.

```
#include <stdio.h>

int find(int arr[5]){
    int i,j, temp;

//printing array in ascending order
    for (i=0;i<5;i++){
     for(j=0;j<4-i;j++){
       if (arr[j]>arr[j+1]){
         temp=arr[j];
```

```
        arr[j]=arr[j+1];
        arr[j+1]=temp;
}
}
}

//printing sorted array
printf("The sorted list is: ");
for (i=0;i<5;i++){
printf("%d ", arr[i]);
}

printf("\nThe 2nd largest element is %d \n",arr[3]);
}

int main()
{
   int a[5], i;

  for(i=0; i<5;i++){
   printf("Enter 5 array elements: ");
   scanf("%d", &a[i]);
}
```

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```
find(a);


   return 0;
}
```

3. Passing an Array: Convert the previous function in such a way that it finds and returns the second largest among n numbers to the main(). The numbers are passed as an array to the function.

```
#include <stdio.h>

int find(int n, int arr[25]){
    int i,j, temp;

//printing array in ascending order
   for (i=0;i<n;i++){
    for(j=0;j<n-i-1;j++){
      if (arr[j]>arr[j+1]){
        temp=arr[j];
        arr[j]=arr[j+1];
        arr[j+1]=temp;
}
}
}
```

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```
//printing sorted array
printf("The sorted list is: ");
for (i=0;i<n;i++){
printf("%d ", arr[i]);
}

printf("\nThe 2nd largest element is %d \n",arr[n-2]);

return arr[n-2];
}

int main()
{
    int a[25], i, size;

   printf("Enter array size: ");
    scanf("%d", &size);

   for(i=0; i<size;i++){
    printf("Enter array elements: ");
    scanf("%d", &a[i]);
}

find(size,a);
```

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```
    return 0;
}
```

4. Average: Write a function that computes the average of the numbers in an array of size ‘n’. The array is passed as an argument to the function. No Global Variables!

```
#include <stdio.h>

int average(int arr[25], int size){
    int i,j;

    if(size>0){
    for(i=1;i<size;i++){
      arr[i]+=arr[i-1];
      //printf("\n %d\n", arr[i]);
    }

   //we are using size-1 instead of i as now i=size whereas
   //in for loop we have condition i<size because a[i]=NUL which is 0
     j= arr[size-1]/size;
     printf("%d",j);
    }
```

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```
}

int main()
{
    int a[25], siz=0, n;

   printf("Enter array size: ");
    scanf("%d", &siz);

   for(n=0;n<siz;n++){
    printf("Enter array elements: ");
    scanf("%d", &a[n]);
}

printf("The average is: ");
average(a, siz);

    return 0;
}
```

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