PES UNIVERSITY	**Week 4: Programs on pointers,arrays and multiple files**	**2021**

Name: Renita Kurian	**SRN: PES1UG20CS331**	**Section: N**
	Date:30/05/2021	**Week Number:4**

1	**Write a function to display an array elements in the reverse order using multiple files.** **a) using index** **b) using pointer**

	Program:
	A) using index
	P1a_client.c:
	#include<stdio.h>
	#include"P1a_server.h"
	int main()
	{
	int a[100];int n;int i;
	printf("Enter the size of an array\n");
	scanf("%d",&n);
	read_array(a,n);
	printf("Array elements: \n");
	disp_array(a,n);
	rev_array(a,0,n-1);
	printf("Reversed array: \n");
	disp_array(a,n);
	return 0;
	}
	
	P1a_server.c:
	#include<stdio.h>
	#include"P1a_server.h"
	void rev_array(int a[],int start,int end)
	{
	int temp;
	while(start<end)
	{
	temp=a[start];
	a[start]=a[end];
	a[end]=temp;
	++start;
	--end;
	}}

```
void read_array(int a[],int n)
{
int i;
printf("Enter elements\n");
for(i=0;i<n;++i)
scanf("%d",&a[i]);
}
void disp_array(int a[],int n)
{
int i;
for(i=0;i<n;++i)
printf("%d\t",a[i]);
printf("\n");
}
```

P1a_server.h:

```
void rev_array(int[],int ,int);
void read_array(int[],int);
void disp_array(int[],int);
```

B) using pointer

P1b_client.c:

```
#include<stdio.h>
#include"P1b_server.h"
int main()
{
int a[100];int n;int i;
printf("Enter the size of an array\n");
scanf("%d",&n);
read_array(a,n);
printf("Array elements: \n");
disp_array(a,n);
rev_array(a,0,n-1);
printf("Reversed array: \n");
disp_array(a,n);
return 0;
}
```

P1b_server.c:

```
#include<stdio.h>
#include"P1b_server.h"
void rev_array(int a[],int start,int end)
{
int temp;
while(start<end)
{
temp=*(a+start);
*(a+start)=*(a+end);
*(a+end)=temp;
++start;
--end;
}}
void read_array(int a[],int n)
{
int i;
printf("Enter elements\n");
for(i=0;i<n;++i)
scanf("%d",&a[i]);
}
void disp_array(int a[],int n)
{
int i;
for(i=0;i<n;++i)
printf("%d\t",a[i]);
printf("\n");
}
```

P1b_server.h:

```
void rev_array(int[],int ,int);
void read_array(int[],int);
void disp_array(int[],int);
```

Output Screenshot:

a)

```
C:\Users\Renita Kurian\Documents\Academic\Second Semester\C Lab>gcc P1a_client.c

C:\Users\Renita Kurian\Documents\Academic\Second Semester\C Lab>gcc P1a_server.c

C:\Users\Renita Kurian\Documents\Academic\Second Semester\C Lab>a
Enter size
3
Enter elements
2 4 6
Reversed elements
6 4 2
```

b)

```
C:\Users\Renita Kurian\Documents\Academic\Second Semester\C Lab>gcc P1b_client.c

C:\Users\Renita Kurian\Documents\Academic\Second Semester\C Lab>gcc P1b_server.c

C:\Users\Renita Kurian\Documents\Academic\Second Semester\C Lab>a
Enter size
5
Enter elements
1 2 3 4 5
Reversed elements
5 4 3 2 1
```

2	**Write a function for factorial using recursion and use it to find C(n,r) using multiple files**

Program:

P2_client.c:

```
#include<stdio.h>
#include"P2_server.h"
int main()
{
int n; int r; int ncr;
printf("Enter the value of n and r\n");
scanf("%d %d",&n,&r);
ncr=fact(n)/(fact(r)*fact(n-r));
printf("ncr is: %d",ncr);
return 0;
}
```

P2_server.c:

```
#include"P2_server.h"
int fact(int n)
{
return(n==0)?1:n*fact(n-1);
}
```

P2_server.h:

```
int fact(int);
```

Output Screenshot:

```
C:\Users\Renita Kurian\Documents\Academic\Second Semester\C Lab>gcc P2_client.c

C:\Users\Renita Kurian\Documents\Academic\Second Semester\C Lab>gcc P2_server.c

C:\Users\Renita Kurian\Documents\Academic\Second Semester\C Lab>a
Enter n and r
8 5
56
```

4	Write a program in C to calculate the power of any number using recursion and multiple files

Program:

P4_client.c:

```
#include<stdio.h>
#include"P4_server.h"
int main()
{
int bNum;int pwr;
long int result;
printf("Input the base value: ");
scanf("%d",&bNum);
printf("Input the value of power : ");
scanf("%d",&pwr);
result=Power(bNum,pwr);
printf("The value of %d to the power of % is: %d\n\n",bNum,pwr,result);
return 0;
}
```

P4_server.c:

```
#include<stdio.h>
#include"power.h"
long int Power(int x,int y)
{
long int result=1;
if(y==0)
return result;
else
result=x*(Power(x,y-1));
}
```

P4_server.h:

```
long int Power(int x,int y);
```

Output Screenshot:

```
C:\Users\Renita Kurian\Documents\Academic\Second Semester\C Lab>gcc P4_client.c

C:\Users\Renita Kurian\Documents\Academic\Second Semester\C Lab>gcc P4_server.c

C:\Users\Renita Kurian\Documents\Academic\Second Semester\C Lab>a
Enter n and power
2 3
8
```

5	Write a function to check whether a given number is prime and use that to find the next prime number, greater than a given number

Program:

P5_client.c:

```
#include<stdio.h>
#include"P5_server.h"
int main()
{
int n;
printf("Enter a number\n");
scanf("%d",&n);
printf("Next prime number=%d\n",nextprime(n));
return 0;
}
```

P5_server.c:

```
#include"server.h"
int isprime(int n)
{
int i,count=0;
for(i=1;i<=n;++i)
{
if(n%i==0)
count++;
}
if(count==2)
return 1;
else if(count>2)
return 0;
}
int nextprime(int n)
{
int i=n+1;
while(1)
{
if(isprime(i))
break;
i++;
}
return i;
}
```

P5_server.h:

```
int isprime(int n);
int nextprime(int n);
```

Output Screenshot:

```
C:\Users\Renita Kurian\Documents\Academic\Second Semester\C Lab>gcc P5_client.c

C:\Users\Renita Kurian\Documents\Academic\Second Semester\C Lab>gcc P5_server.c

C:\Users\Renita Kurian\Documents\Academic\Second Semester\C Lab>a
Enter a number
20
Next prime number: 23
```