Bharathidasan University

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Programme Name	Bachelor of Computer Applications
Course Code	23UCALCO3
Course Title	Data structure and algorithm Lab
Semester	III
Unit	II
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Program 5: String Functions

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main()
{
char str[]= “Hello Friends”;
char str1[]= “Welcome”;
clrscr();
printf(“\n String Functions”);
printf(“\n **********”);
printf(“\n The string 1 is: %s”,str);
printf(“\n The string 2 is: %s”,str1);
strcat(str,str1);
printf(“\n Concat string is: %s”,str);
printf(“\n String length is: %d”,strlen(str));
printf(“\n Upper case is: %s”,strupr(str));
printf(“\n Lower case is:%s”,strlwr(str));
printf(“\n Reverse string is:%s”,strrev(str));
getch();
}
```

Output :

String Functions

****

The string 1 is: Hello Friends

The string 2 is: Welcome

Concat string is: Hello Friends Welcome

String length is: 21

Upper case is: HELLO FRIENDS WELCOME

Lower case is: hello friends welcome

Reverse string is: emoclew sdneirf olleh

Program 6: Stack operations

```
#include <stdio.h>
#include<conio.h>
int stack[100],i,j,ch=0,n,top=-1;
void main()
{
printf("\n Stack operations using array");
printf("\n **********************");
printf("\n Enter the number of elements in the stack");
scanf("%d",&n);
while(ch !=4)
{
printf("\n 1.Push \n 2.Pop \n 3.Show \n 4.Exit");
printf("\n Enter your choice: \n")
scanf("%d",&ch);
switch(ch)
{
case 1:
{
int val;
if(top ==n)
printf("\n  !**Stack is Overflow **);
else
{
printf("Enter  the value:");
scanf("%d",&val);
top=top+1;
stack[top]=val;
}
break;
```

```
}
case 2:
{
if(top==-1)
printf("\n Stack is Underflow");
else
top=top-1;
break;
}
case 3:
{
for(i=top;i>=0;i--)
{
printf("\n Stack is empty");
}
break;
}
case 4:
{
printf("\n Exit");
break;
}
default:
{
printf("\n Enter value from 1 to 4");
break;
}
};
}
}
```

Output:

Stack operations using array

****

Enter the number of elements in the stack: 4

1. Push

2. Pop

3. Show

4. Exit

Enter your choice: 1

Enter the value: 28

1. Push

2. Pop

3. Show

4. Exit

Enter your choice: 1

Enter the value: 29

1. Push

2. Pop

3. Show

4. Exit

Enter your choice: 1

Enter the value: 32

1. Push

2. Pop

3. Show

4. Exit

Enter your choice: 1

Enter the value: 35

1. Push

2. Pop

3. Show

4. Exit

Enter your choice: 3

35

32

29

28

1. Push

2. Pop

3. Show

4. Exit

Enter your choice: 2

1. Push

2. Pop

3. Show

4. Exit

Enter your choice: 2

1. Push

2. Pop

3. Show

4. Exit

Enter your choice: 3

29

28

1. Push

2. Pop

3. Show

4. Exit

Enter your choice: 4

Exit

Program 7: Queue operations

```
#include <stdio.h>
#include<conio.h>
#include<stdlib.h>
void main()
{
int item,choice,i;
int arr_queue[MAX_SIZE];
int rear=0;
int front=0;
int exit=1;
clrscr( );
printf("\n Queue operations ");
printf("\n ***************");
do
{
printf("\n Queue Main Menu");
printf("\n 1.Insert \n2.Remove \n 3.Display \n 4.Exit");
printf("\n Enter your choice:");
scanf("%d", &choice);
switch(choice)
{
case 1:
        if(rear ==MAX_SIZE)
printf("\n Queue reached Maximum");
else
{
printf("\n Enter the value to insert:\n");
scanf("%d",&item);
arr_queue[rear++]=item;
```

```
}
break;
case 2:
        if(front == rear)
        printf("\n Queue is Empty");
        else
        {
        printf("\n Position:%d,removed value:%d", front,arr_queue[front]);
        front++;
}
        break;

case 3:
        printf("\n Queue size:%d",rear);
        for(i=front;i<rear;i++)
        printf("\n position: %d, value:%d",i, arr_queue[i]);
        break;
default:
        exit=0;
        break;
}while(exit);
getch();
}
```

Output:

Queue operations

****

Queue Main Menu

1. Insert
2. Remove
3. Display
4. Exit

Enter your choice: 1

Enter the value to insert: 10

Position: 1, Inserted value:10

Queue Main Menu

1. Insert

2. Remove

3. Display

4. Exit

Enter your choice: 1

Enter the value to insert: 20

Position: 2, Inserted value: 20

Queue Main Menu

1. Insert

2. Remove

3. Display

4. Exit

Enter your choice: 1

Enter the value to insert: 30

Position: 3, Inserted value: 30

Queue Main Menu

1. Insert

2. Remove

3. Display

4. Exit

Enter your choice: 3

Queue size: 3

Position: 0, value: 10

Position: 1, value: 20

Position: 2, value: 30

Queue Main Menu

1. Insert

2. Remove

3. Display

4. Exit

Enter your choice: 2

Position: 0, removed value: 10

Queue Main Menu

1. Insert

2. Remove

3. Display

4. Exit

Enter your choice: 3

Queue size: 2

Position: 0, value: 20

Position: 1, value: 30

Queue Main Menu

1. Insert

2. Remove

3. Display

4. Exit

Enter your choice: 4

Exit

Program 8: LINEAR SEARCH

```
#include <stdio.h>
#include<conio.h>
void main()
 {
 int array[50], search, i, n;
clrscr( );
 printf("\n\nLINEAR SEARCH");
printf("\n ******************");
 printf("\nEnter number of elements in array");
 scanf("%d", &n);
printf("\n Enter %d integer(s)\n", n);
 for (i = 0; i < n; i++)
 scanf("%d", &array[i]);
 printf("Enter a number to search\n");
 scanf("%d", &search);
 for (i = 0; i < n; i++)
 {
 if (array[i] == search)
 {
 printf("%d is present at location %d.\n", search, i+1);
 break;
 }
 }
 if (i == n)
 printf("%d isn't present in the array.\n", search);
getch();
 }
```

Output:

```
LINEAR SEARCH
**********
Enter number of elements in array
5
Enter 5 integer(s)
2
3
1
6
4
Enter a number to search
4
4 is present at location 5.
```

Program 9: Bubble sort

```
#include<stdio.h>
#include<conio.h>
void bsort(int a[],int n)
{
int i,j,t;
for(i=0;i<n-1;i++)
{
for(j=0;j<n-i-1;j++)
{
if(a[j]>a[j+1])
{
t=a[j];
a[j]=a[j+1];
a[j+1]=t;
}
}
}
}
void main()
{
int a[30],i,n,l,h,ch;
clrscr();
printf("\nEnter the size of array:");
scanf("%d",&n);
printf("\n Enter the elements: ");
for(i=0;i<n;i++)
scanf("%d",&a[i]);
bsort(a,n);
printf("\nThe sorted elements are");
```

```
for(i=0;i<n;i++)
printf("%d\n",a[i]);
getch();
}
```

Output:

```
Enter the size of array:
5
Enter the elements:
9
-1
2
4
3
The sorted elements are
-1
2
3
4
9
```

Program 10: Selection sort

```
#include<stdio.h>
#include<conio.h>
void selection_sort(int a[],int n)
{
int i,j,temp;
clrscr();
for(i=0;i<n-1;i++)
{
int arrayindex=i;
for(j=i+1;j<n;j++)
{
if(a[j]<a[arrayindex])
arrayindex=j;
}
temp=a[i];
a[i]=a[arrayindex];
a[arrayindex]=temp;
}
}
void main()
{
int a[100],n,i;
printf("\n Selection Sort");
printf("\n ***********");
printf("\nEnter the number of elements: ");
scanf("%d",&n);
printf("\nEnter the array elements: ");
for(i=0;i<n;i++)
{
scanf("%d",&a[i]);
}
selection_sort(a,n);printf("Sorted array: \n");
for(i=0;i<n;i++)
{
printf("%d\t",a[i]);
```

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

Output:

```
Selection Sort
**********
Enter the number of elements: 5
Enter the array elements:
3
8
-5
5
7
Sorted array:
-5 3 5 7 8
```