

Lab 2 programs:-

1) Swapping using pointers

```
#include <stdio.h>
void swap (int *x, int *y)
{
    int t;
    t = *x;
    *x = *y;
    *y = t;
}

void main ()
{
    int num1, num2;
    printf ("Enter a value \n");
    scanf ("%d", &num1);
    printf ("Enter a value \n");
    scanf ("%d", &num2);
```

printf ("values before swapping are %d and %d\n",
 num1, num2);

swap (num1, num2);

~~printf ("values after swapping are num1: %d and
 num2: %d \n", num1, num2);~~

Output :-

Enter a value of num1: 2
Enter value of num2: 5

Value before swapping
are 2 and 5

values after swapping are
5 and 2

2). Dynamic Memory Allocation :

- a) malloc
- b) calloc
- c) free
- d) realloc

```
#include <stdio.h>
#include <conio.h>
int main()
{
    int *ptr;
    int n, i;
    n = 5;
    printf ("Enter number of elements : ");
    scanf ("%d", &n);
    ptr = (int *) malloc (n * sizeof (int));
    if (ptr == NULL)
        printf ("Memory not allocated (%d)", n);
    exit (0);
}
```

y
else {

```
    printf ("Memory successfully allocated using
            malloc (%d)", n);
    for (i = 0; i < n; i++)
        ptr[i] = i + 1;
```

y.

```
    printf ("The elements of the array are : ");
    for (i = 0; i < n; i++)
        printf ("%d", ptr[i]);
```

y.

```
ptr = (int *) calloc (n, sizeof (int));
```

```
if (ptr == NULL)
```

```
{
```

```
    printf ("Memory not allocated (%d)", n);
```

```
    exit(0);  
}
```

```
else  
{
```

```
    printf ("Memory successfully allocated using  
    calloc (%d);\n", n);
```

```
    for (i = 0; i < n; i++) {  
        }
```

```
        printf ptr[i] = i + 1;
```

```
    printf ("The elements of array are : ");  
    for (i = 0; i < n; i++) {  
        }
```

```
        printf ("%d", ptr[i]);
```

```
}
```

```
n = 10;  
printf ("The elements of array are : ");
```

```
for (i = 0; i < n; i++) {  
    }
```

~~printf ("~~~~printf ("In Enter new size of array : ");~~
~~ptr = (int *) realloc (ptr, n * size of (int));~~~~printf ("Memory successfully re-allocated using
realloc (%d);\n", n);~~~~for (i = 5; i < n; i++) {
 }~~

```
    printf "%d", ptr[i];
```

```
}
```

```
printf ("The elements of the array are : ");
```

```
for (i = 0; i < n; i++) {  
    }
```

```
    printf ("%d", ptr[i]);
```

```
}
```

```
    free(ptr);  
}
```

```
return 0;  
}
```

OUTPUT:-

Enter number of elements : 5

Memory successfully allocated

Elements of array are : 1, 2, 3, 4, 5.

Memory allocated using malloc

Elements of array are : 1, 2, 3, 4, 5.

Enter the new size of array : 10

Memory successfully re-allocated using realloc

Elements of array are : 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

3) #include <stdio.h>
#include <conio.h>
void pr
define N 10

void push();

void pop();

void display();

int stack[N];

int top = -1;

void main()

{

int ch;

do

{

printf ("Enter choice 1: Push |t 2: Pop |t 3: Display \n");

printf ("Enter your choice\n");

scanf ("%d", &ch);

switch (ch) {

case 1: push();

break;

case 2: pop();

break;

case 3: display();

break;

default: printf ("Not valid value\n");

y

while (ch != 0)

getch();

y

```
void push () {
```

```
}
```

```
int x;
```

```
printf ("Enter your value\n");
```

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

```
if (top == N)
```

```
{
```

```
printf ("Overflow");
```

```
}
```

```
else {
```

```
top++;
```

```
stack [top] = x;
```

```
}
```

```
void pop ()
```

```
{
```

```
int y;
```

~~```
if (stack [y] == stack [t])
```~~~~```
if (top == -1)
```~~~~```
{
```~~

```
printf ("Underflow");
```

```
}
```

```
else
```

```
{
```

~~```
y = stack [y];
```~~~~```
top--;
```~~~~```
}
```~~

```
void display ()
```

```
{
```

```
int i;
```

```
for (i = top; i >= 0; i--)
```

```
{
```

```
printf ("Elements are %d", stack [i]);
```

1 3
4 .

OUTPUT:-

Enter a choice

1: push 2: pop 3: display

Enter your choice

1

Enter a value

4.

Enter a choice 1: push 2: pop 3: display

Enter your choice

2

~~Enter 0~~

4.

Enter a choice 1: push 2: pop 3: display

Enter your choice

3.

SFT
21/2/23