

2) WAP to insert item in middle of the linked list

```
#include <stdio.h>
```

```
#include <stdlib.h>
```

```
struct node
```

```
{ int data;
```

```
struct node * next;
```

```
};
```

```
int main()
```

```
{
```

```
struct node * head = NULL, * temp, * new;
```

```
int arr[ ] = {10, 20, 30, 40};
```

```
int n = 4;
```

```
for (int i = 0; i < n; i++)
```

```
{
```

```
new = (struct node *) malloc (sizeof(struct  
node));  
new -> data = arr[i];
```

```
new -> next = NULL;
```

```
if (head == NULL)
```

```
{ head = new; }
```

```
else
```

```
{ temp = head;
```

```
while (temp -> next != NULL)
```

OUTPUT:-

Original list : 10 20 30 40
After insertion : 10 20 35 30 40

{ temp = temp → next;
temp → next = new;

{

}

int count = 0;

temp = head;

while (temp != NULL)

{ count ++;

temp = temp → next; }

int mid = count / 2;

new = (struct node *) malloc (size of (struct
node));

new → data = 99;

temp = head;

for (int i = 1; i < mid; i++)

{ temp = temp → next; }

new → next = temp → next;

temp → next = new;

temp = head;

while (temp != NULL)

{

printf ("%d \rightarrow ", temp → data);

temp = temp → next;

→
printf ("NULL");

return 0;

↑

EXPERIMENT - 12

1) WAP to define some constant Variable in preprocessor.

```
# include<stdio.h>
```

```
# define Pi 3.14
```

```
int main()
```

```
{
```

```
int radius = 10;
```

```
" float area = Pi * radius * radius;
```

```
float perimeter = 2 * Pi * radius;
```

```
printf ("Area : %.2f\n", area);
```

```
printf ("perimeter : %.2f", perimeter);
```

```
return 0;
```

```
}
```

OUTPUT :-

Area : 314.00

Perimeter : 62.80

2) WAP to define a function in derivatives.

```
#include <stdio.h>
#define square(a) ((a)*(a))
```

```
int main()
```

```
{
```

```
printf ("Enter the side of square");
scanf ("%d\n", b);
```

```
printf ("\n%d", square(b));
```

```
return 0;
```

```
}
```

OUTPORT - enter the side of Squares of 9x9
Row width 5

Square : 25

EXPERIMENT - 13

Q WAP to define multiple macros to perform arithmetic functions.

```
#include <stdio.h>
#define add(a,b) ((a)+(b))
#define sub(a,b) ((a)-(b))
#define product(a,b) ((a)*(b))
#define division(a,b) ((a)/(b))
```

```
int main()
```

```
{
```

```
    printf ("%d\n", add(5,6));
    printf ("%d\n", sub(5,6));
    printf ("%d\n", product(5,6));
    printf ("%d\n", division(5,6));
```

```
return 0;
```

```
}
```

Output is showing a series of 9AC

OUTPUT -

11
-1

30

0

(Wrong input)

(Wrong input)

to make

EXPERIMENT - 14

Write a program to create a static library for performing arithmetic function

FILE 1 arith.h

```
int add(int a, int b);  
int sub(int a, int b);  
int product (int a, int b);  
int div (int a, int b);
```

FILE 2 arith.c

```
#include "arith.h"
```

```
int add (int a, int b)
```

```
{
```

```
    return a+b;
```

```
}
```

```
int sub (int a, int b)
```

```
{
```

```
    return a-b;
```

```
}
```

```
int product (int a, int b)
```

Teacher's Signature _____

OUTPUT = Sum 10

Difference 0

Product 25

Division 1

```
{  
    return a * b;  
}  
int div(int a, int b)  
{  
    return a/b;  
}
```

FILE 3 main.c

```
#include <stdio.h>  
#include "arith.h"  
int main()  
{ int a = 20, b = 10;  
    printf("Sum : %d\n", add(a,b));  
    printf("difference : %d\n", sub(a,b));  
    printf("Division : %d\n", div(a,b));  
    return 0;  
}
```

Q) WAP to use ----- ?

```
#include <stdio.h>
#include "arith.h"
int main()
{
    int a=5, b=5;
```

```
    printf("Sum : %d\n", add(a,b));
    printf("difference : %d\n", sub(a,b));
    printf("product : %d\n", product(a,b));
    printf("division: %d\n", div(a,b));
```

```
    return 0;
```

```
}
```

OUTPUT:-

Sum : 10

Difference : 0

Product : 25

Division : 1

EXPERIMENT -15

- Q) a) Write a shared library for performing arithmetic functions

FILE 1 arith_shared.h

```
int add (int, int);  
int sub (int, int);  
int mul (int, int);  
int divide (int, int);
```

FILE -2 arith-shared.c

```
int add (int a, int b)  
{
```

```
    return a+b;  
}
```

```
int sub (int a, int b)  
{
```

```
    return a-b;  
}
```

```
int mul (int a, int b)  
{
```

```
    return a*b;
```

Teacher's Signature _____

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```
int divide (int a, int b)
```

{

```
    return a/b;
```

}

2) WAP to use shared library in other program

FILE main.shared.c

```
#include <stdio.h>
```

```
#include "arith_shared.h"
```

```
int main()
```

{

```
    int a = 10, b = 5;
```

```
    printf ("Add = %d\n", add(a,b));
```

```
    printf ("Sub = %d\n", sub(a,b));
```

```
    printf ("Mul = %d\n", mul(a,b));
```

```
    printf ("Div = %d\n", divide (a,b));
```

```
    return 0;
```

}

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Output:-

\$ gcc -fno-common -c arith.c
\$ g++ -fno-common -c arithmetic.a arithmetic.o

\$ gcc main_static.c -L. -larith -o staticapp

\$./staticapp

\$ Add = 15

Sub = 5.

Mul = 50

Div = 2