# Library Module – Shared Library

1. Create 3 files as below.
    - libapplication.c – will contain main() and will invoke functions in cal_utility.c
    - cal_utility.c – will contain atleast 2 or more functions [ You may add definitions of the functions in this file ]
    - cal_utility.h – will contain the extern declarations/prototypes of the functions in cal_utility.c

libapplication.c

```c
#include<stdio.h>
#include"calutility.h"
int main(){
        int a=10,b=5;
        int sum=add(a,b);
        int diff=subtract(a,b);

        printf("Addition result:%d\n",sum);
        printf("Subtraction result:%d\n",diff);
        return 0;
 }
```

cal_utility.c

```c
#include<stdio.h>
#include"calutility.h"
int add(int x,int y){
        return x+y;
}
 int subtract(int x,int y){
         return x-y;
}

int multiply(int x,int y){
        return x*y;
}
```

cal_utility.h

```c
#ifndef CALUTILITY_H
#define CALUTILITY_H

extern int add(int x,int y);
extern int subtract(int x,int y);
extern int multiply(int x,int y);

#endif
~
~
~
```

2. Refer the steps for shared library and create a shared library comprising of cal_utility.c,.h files

**Ans: gcc -FPIC -c calutility.c**

**gcc -shared -o libcalutility.so calutility.o**

3. Create an executable using shared library.

**ANS: gcc -o application libapplication.c cal_utility.c**

4. Execute the application created step 3.

**Ans: ./application**

```
user64@trainux01:~/Batch17Oct2024_189/Assignment/program$ gcc -FPIC -c calutility.c
user64@trainux01:~/Batch17Oct2024_189/Assignment/program$ gcc -shared -o libcalutility.so calutility.o
user64@trainux01:~/Batch17Oct2024_189/Assignment/program$ gcc -o application libapplication.c calutility.c
user64@trainux01:~/Batch17Oct2024_189/Assignment/program$ ./application
Addition result:15
Subtraction result:5
```