

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

```
1 #include <stdio.h>
2 #include "cal_utility.h" // Include the header for cal_utility functions
3
4 int main() {
5     int num1 = 10, num2 = 5;
6     int sum = add(num1, num2); // Call add function
7     int diff = subtract(num1, num2); // Call subtract function
8
9     printf("Sum: %d\n", sum);
10    printf("Difference: %d\n", diff);
11
12    return 0;
13 }
```

cal_utility.c

```
1 #include <stdio.h>
2 #include "cal_utility.h" // Include the header for function prototypes
3
4 // Function to add two numbers
5 int add(int a, int b) {
6     return a + b;
7 }
8
9 // Function to subtract two numbers
10 int subtract(int a, int b) {
11     return a - b;
12 }
13
14 // You can add more functions here as needed
15 // For example, a multiplication function:
16 int multiply(int a, int b) {
17     return a * b;
18 }
```

cal_utility.h

```

1 #ifndef CAL_UTILITY_H // Include guard to prevent multiple inclusions
2 #define CAL_UTILITY_H
3
4 // Function prototypes for the functions defined in cal_utility.c
5 extern int add(int a, int b);
6 extern int subtract(int a, int b);
7 extern int multiply(int a, int b); // Adding the prototype for the multiply function
8
9 #endif // CAL_UTILITY_H

```

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

```

user72@trainux01:~/Assignments$ gcc -o application libapplication.c cal_utility.c
user72@trainux01:~/Assignments$ ./application
Sum: 15
Difference: 5

```