

Library Module – Static Library

1. Create 3 files as below. Let cal_utility.c, .h files be part of the library
 - 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

```
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 }
14
15 #include <stdio.h>
16 #include "cal_utility.h" // Include the header for function prototypes
17
18 // Function to add two numbers
19 int add(int a, int b) {
20     return a + b;
21 }
22
23 // Function to subtract two numbers
24 int subtract(int a, int b) {
25     return a - b;
26 }
27
28 // You can add more functions here as needed
29 // For example, a multiplication function:
30 int multiply(int a, int b) {
31     return a * b;
32 }
```

```
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 static library based application and create a static library application using above set of files.

Ans: gcc -c calutility.c

ar rcs libcalutility.a calutility.o

gcc -o application libapplication.c -L. -lcalutility

3. Execute the application created in step #2

```
user72@trainux01:~/Assignments$ gcc -c cal_utility.c
user72@trainux01:~/Assignments$ ar rcs libcal_utility.a cal_utility.o
user72@trainux01:~/Assignments$ gcc -o application libapplication.c -L. -lcal_utility
user72@trainux01:~/Assignments$ ./application
Sum: 15
Difference: 5
```