**STATIC LIBRARY**

Step-by-Step Solution:

1. Create the files:

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a. libapplication.c (contains main() and invokes functions from cal\_utility.c)

Create this file with the following content:

**#include "cal\_utility.h"**

**int main() {**

**int sum = add(5, 3); // Calls add function**

**int diff = subtract(10, 4); // Calls subtract function**

**printf("Sum: %d\n", sum);**

**printf("Difference: %d\n", diff);**

**return 0;**

**}**

A screenshot of a computer screen

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b. cal\_utility.c (contains definitions of functions)

Create this file with the following content:

**#include "cal\_utility.h"**

**// Function to add two numbers**

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

**return a + b;**

**}**

**// Function to subtract two numbers**

**int subtract(int a, int b) {**

**return a - b;**

**}**

A screen shot of a computer code

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c. cal\_utility.h (contains extern declarations for functions in cal\_utility.c)

Create this header file with the following content:

**#ifndef CAL\_UTILITY\_H**

**#define CAL\_UTILITY\_H**

**extern int add(int a, int b);**

**extern int subtract(int a, int b);**

**#endif**

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2. Create a Static Library:

In order to use cal\_utility.c as a static library, we need to compile the source file (cal\_utility.c) into an object file (cal\_utility.o), and then create the static library (libcal\_utility.a).

a. Compile the cal\_utility.c file into an object file:

**gcc -c cal\_utility.c -o cal\_utility.o**

This generates cal\_utility.o, which is the object file for cal\_utility.c.

b. Create the static library libcal\_utility.a:

**ar rcs libcal\_utility.a cal\_utility.o**

This command creates the static library libcal\_utility.a from the object file cal\_utility.o.

3. Compile the Application with the Static Library:

Now, we need to compile libapplication.c and link it with the static library libcal\_utility.a.

**gcc -o libapplication libapplication.c -L. -lcal\_utility**

4. Execute the Application:

After successfully compiling the application, run it using:

**./libapplication**

This should print the sum and difference of the two numbers, as calculated by the functions from cal\_utility.c.