Doxygen

My Project

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Macros | Functions

area.c File Reference

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

Include dependency graph for area.c:

Macros

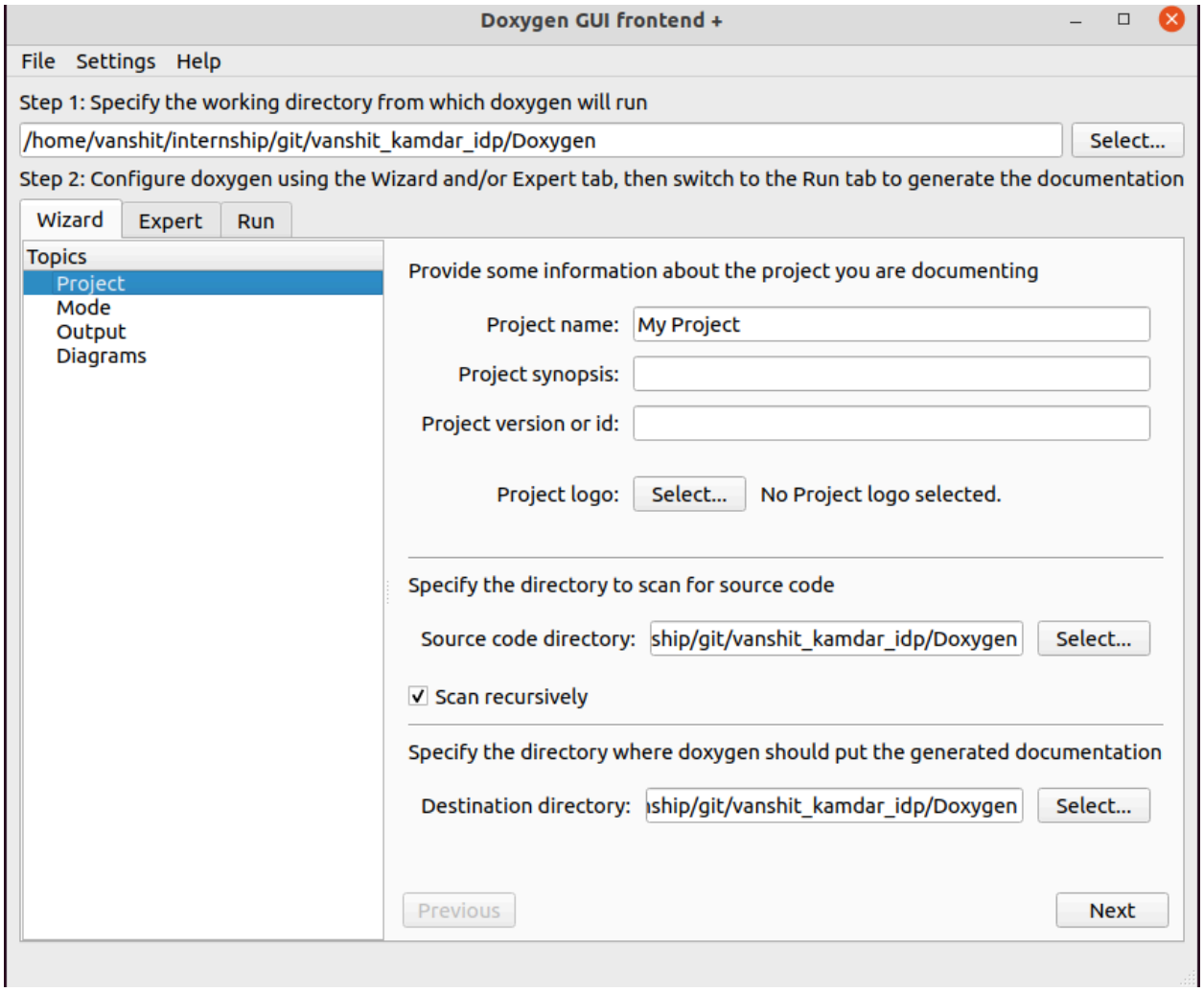
#define **PI** 3.1415
Mathematical constant PI. More...

#define **RADIUS_M** 7.82
Radius in meters. More...

Functions

float **calculate_area** (float radius)
float **calculate_perimeter** (float radius)
int **main** ()

Macro Definition Documentation


Doxygen GUI frontend +
File Settings Help
Step 1: Specify the working directory from which doxygen will run
/home/vanshit/internship/git/vanshit_kamdar_idp/Doxygen
Select...
Step 2: Configure doxygen using the Wizard and/or Expert tab, then switch to the Run tab to generate the documentation
Wizard
Expert
Run
Topics
Project
Mode
Output
Diagrams
Provide some information about the project you are documenting
Project name:
My Project
Project synopsis:
Project version or id:
Project logo:
Select...
No Project logo selected.
Specify the directory to scan for source code
Source code directory:
ship/git/vanshit_kamdar_idp/Doxygen
Select...
Scan recursively
Specify the directory where doxygen should put the generated documentation
Destination directory:
ship/git/vanshit_kamdar_idp/Doxygen
Select...
Previous
Next

Function Documentation

◆ calculate_area()

float calculate_area (float radius)

Calculates the Area of the circle. Formula: Area = PI*r^2

Parameters

[in] **radius**

[out] **area**

◆ calculate_perimeter()

float calculate_perimeter (float radius)

Calculates the Perimeter of the circle. Formula: Perimeter = 2*PI*r

Parameters

[in] **radius**

[out] **perimeter**

FunctionsandProgramStructure

Q1)
Write the function strindex(s,t) which returns the position of the rightmost occurrence of t in s, or -1 if there is none.

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/FunctionsandProgramStructure/Exercise1$ cd out
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/FunctionsandProgramStructure/Exercise1/out$ ls
main
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/FunctionsandProgramStructure/Exercise1/out$ ./main
Found: 6
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/FunctionsandProgramStructure/Exercise1/out$
```

Q2)
Extend atof to handle scientific notation of the form
123.45e-6
where a floating-point number may be followed by e or E and an optionally signed exponent.

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/FunctionsandProgramStructure/Exercise2/out$ ./main
Enter string:
123.45e-6
Length = 9
Floating-point value = 0.000123vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/FunctionsandProgramStructure/Exercise2/out$
```

Q3)
Given the basic framework, it's straightforward to extend the calculator. Add the modulus (%) operator and provisions for negative Numbers.

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/FunctionsandProgramStructure/Exercise3/out$ ./main
10 20 30 -5 -2 +
        -7
```

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/FunctionsandProgramStructure/Exercise3/out$ ./main
200 10 %
        0
100 0.0 %
erro:zero divisor
        100
```

Q4)
Add access to library functions like sin, exp, and pow.

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/FunctionsandProgramStructure/Exercise4/out$ ./main
Value 2 ^ 3 = 8.000000
exponential value = 162754.791419
The cosine of 60.000000 is 0.500000 degrees
The sine of 60.000000 is 0.866025 degrees
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/FunctionsandProgramStructure/Exercise4/out$
```

Q5)
Add the commands to print the top elements of the stack without popping, to duplicate it, and to swap the top two elements. Add a command to clear the stack.

```
10 20 30 40 50 ?
topmost=50.000000
secondmost=40.000000
```

```
 100 120 130 140 d
 topmost=140.000000second topmost=140.000000
```

```
150 160 170 190 s
top=190.000000 and second=170.000000
new topmost=170.000000
new secondmost=190.000000       170
```

```
c

stack cleared
error: stack empty
```

Q6)
Write a routine ungets(s) that will push back an entire string onto the input. Should ungets know about buf and bufp, or should it just use ungetch?

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/FunctionsandProgramStructure/Exercise6/out$ ./main
enter string:
hello world

Characters retrieved from the buffer:
dlrow olleh
```

Q7)
Adapt the ideas of printd to write a recursive version of itoa; that is, convert an integer into a string by calling a recursive routine.

```
vanshit@66JC9F2-Desk:~/in
123vanshit@66JC9F2-Desk:~
```

Q8)
Write a recursive version of the function reverse(s), which reverses the string s in place.

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/FunctionsandProgramStructure/Exercise8/out$ ./main
Original string: Hello, world!
Reversed string: !dlrow ,olleH
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/FunctionsandProgramStructure/Exercise8/out$
```

Q9)

Q9)Suppose that there will never be more than one character of pushback. Modify getch and ungetch accordingly.

```
vrk@vrk-VirtualBox:~/testingpurpose$ ./obj
Enter character: h
h
No space left for ungetch
vrk@vrk-VirtualBox:~/testingpurpose$ ./obj
Enter character: hello
h
No space left for ungetch
vrk@vrk-VirtualBox:~/testingpurpose$
```

Q10)
Our getch and ungetch do not handle a pushed-back EOF correctly. Decide what their properties ought to be if an EOF is pushed back, then implement your design.

```
vrk@vrk-VirtualBox:~/testingpurpose$ ./obj
Enter a string: hello
EOF added
String in the buffer: olleh
```

Q11)
An alternate organization uses getline to read an entire input line; this makes getch and ungetch unnecessary. Revise the calculator to use this approach.

```
vrk@vrk-VirtualBox:~/testingpurpose$ ./obj
11 12 14 15 18 20 + ?
topmost=38.000000
secondmost=15.000000
```

Q12)
Modify getop so that it doesn't need to use ungetch.

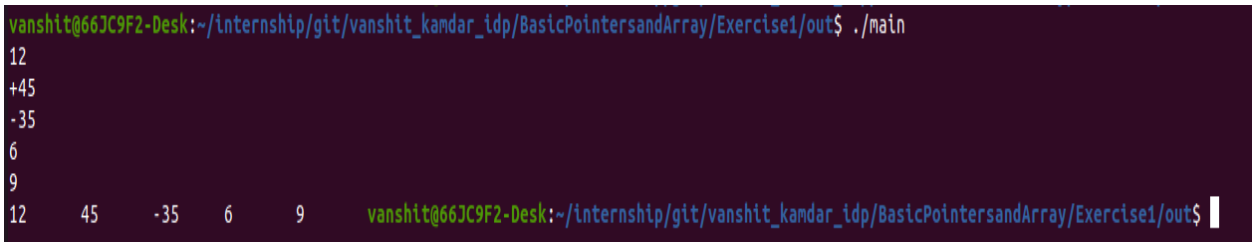
```
vrk@vrk-VirtualBox:~/te
12 13 14 5 6 7 * ?
topmost=42.000000
secondmost=5.000000
```

Q13)
Define a macro swap(t,x,y) that interchanges two arguments of type t.

```
Before swap: a = 11, b = 10
After swap: a = 10, b = 11
```

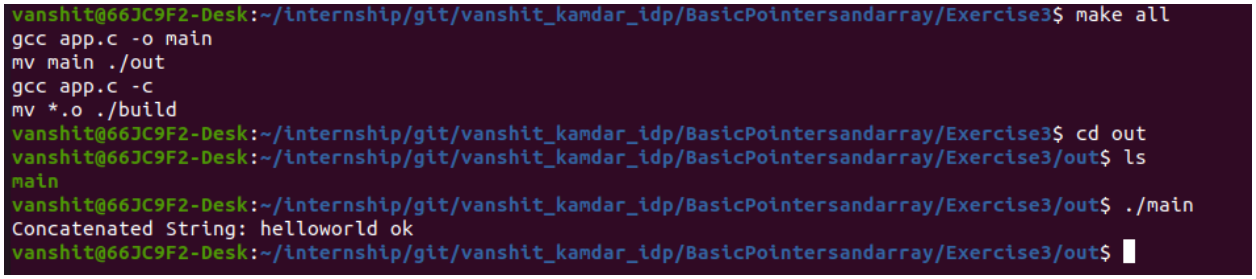
BasicPointersandArray

Q1)
As written, getint treats a + or - not followed by a digit as a valid representation of zero. Fix it to push such a character back on the input.



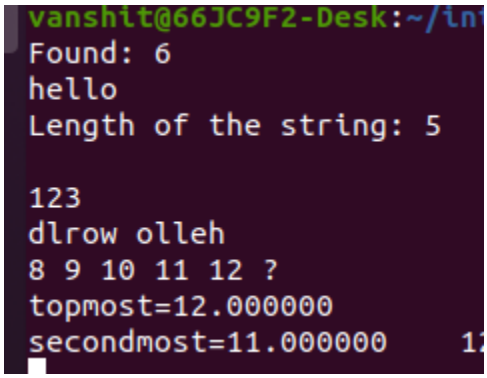
Q2)
Write getfloat, the floating-point analog of getint. What type does getfloat return as its function value?

Q3)
Write a pointer version of the function strcat that we showed in Chapter 2: strcat(s,t) copies the string t to the end of s. ?



Q4)
Write versions of the library functions strncpy, strncat, and strncmp, which operate on at most the first n characters of their argument strings. For example, strncpy(s,t,n) copies at most n characters of t to s. Full descriptions are in Appendix B.

Q5)
Rewrite appropriate programs from earlier chapters and exercises with pointers instead of array indexing. Good possibilities include getline (Chapters 1 and 4), atoi, itoa, and their variants (Chapters 2, 3, and 4), reverse (Chapter 3), and strindex and getop (Chapter 4).



StructureandUnion

Exercise 1

Our version of getword does not properly handle underscores, string constants, comments, or preprocessor control lines. Write a better version.

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/StructureandUnion/Exercise1/out$ ./main
x=y+z
Word: x
Word: =
Word: y
Word: +
Word: z
```

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/StructureandUnion/Exercise1/out$ ./main
#include <stdio.h>
Word: include <stdio.h>
```

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/StructureandUnion/Exercise1/out$ ./main
/* this is a comment */
Word: /* this is a comment */
```

Exercise 2

Write a program that prints the distinct words in its input sorted into decreasing order of frequency of occurrence. Precede each word by its count.

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/StructureandUnion/Exercise2/out$ ./main
Word Count in Decreasing Order:
portal--->      count:3
A--->   count:2
science--->     count:2
computer--->    count:1
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/StructureandUnion/Exercise2/out$
```

Exercise 3

Write a cross-referencer that prints a list of all words in a document, and for each word, a list of the line numbers on which it occurs. Remove noise words like ``the,'' ``and,'' and so on.

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/StructureandUnion/Exercise3/out$ ./main
The word 'Hello' belongs to line 1
The word 'world' belongs to line 1
The word 'good' belongs to line 2
The word 'evening' belongs to line 2
The word 'afternoon' belongs to line 3
The word 'is' belongs to line 3
The word 'blessed' belongs to line 3
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/StructureandUnion/Exercise3/out$
```

Exercise 4

Write a function undef that will remove a name and definition from the table maintained by lookup and install.

```
0   Moph    ---
1   ---
2   ---
3   ---
4   ---
5   ---
6   Jacob   ---
7   Kate    ---
8   ---
9   lilly   ---
```

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/StructureandUnion/Exercise4/out$ ./main
found lilly
deleted word=lilly
0       Moph    ---
1       ---
2       ---
3       ---
4       ---
5       ---
6       Jacob   ---
7       Kate    ---
8       ---
9       ---
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/StructureandUnion/Exercise4/out$
```

Exercise 5

Implement a simple version of the #define processor (i.e., no arguments) suitable for use with C programs, based on the routines of this section. You may also find getch and ungetch helpful.

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/StructureandUnion/Exercise5/out$ ./main
0       Moph    ---
1       ---
2       ---
3       ---
4       jake    ---
5       ---
6       Jacob   ---
7       Kate    ---
8       ---
9       lilly   ---
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/StructureandUnion/Exercise5/out$
```

InputandOutput

Q1)
Write a program that converts upper case to lower or lower case to upper, depending on the name it is invoked with.

```
vrk@vrk-VirtualBox:~/testingpurpose$ ./main lower
Enter text to convert: HELLO
hello
```

```
vrk@vrk-VirtualBox:~/testingpurpose$ ./main upper
Enter text to convert: hello
HELLO
```

Q2)
Write a program that will print arbitrary input in a sensible way. As a minimum, it should print non-graphic characters in octal or hexadecimal according to local custom, and break long text lines.

```
vrk@vrk-VirtualBox:~/testingpurpose$ ./main
This is a longer str
ing with more \011 t
han 20 characters.\012
vrk@vrk-VirtualBox:~/testingpurpose$
```

Q3)
Revise minprintf to handle more of the other facilities of printf.

```
vrk@vrk-VirtualBox:~/testingpurpose$ ./main
Hello,World
10
13
hello
11.000000vrk@vrk-VirtualBox:~/testingpurpose$
```

Q4)
Write a program to compare two files, printing the first line where they differ.

```
vrk@vrk-VirtualBox:~/testingpurpose/fileio$ ./main
this is of file1.txt:new is change
this is of file2.txt:new is the change
files are not identicalvrk@vrk-VirtualBox:~/testingpurpose/fileio$
```

Q5)
Write a program to print a set of files, starting each new one on a new page, with a title and a running page count for each file.

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/InputandOutput/Exercise5/out$ ./main

-----
Title: /home/vanshit/internship/git/vanshit_kamdar_idp/InputandOutput/Exercise5/file1.txt
Page: 1
hello world
changes meet
new people

-----
Title: /home/vanshit/internship/git/vanshit_kamdar_idp/InputandOutput/Exercise5/file2.txt
Page: 2
nice to meet you
good to see you
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/InputandOutput/Exercise5/out$
```

Q6)
Modify the pattern finding program of Chapter 5 to take its input from a set of named files or, if no files are named as arguments, from the standard input. Should the file name be printed when a matching line is found?

```
vrk@vrk-VirtualBox:~/testingpurpose/fileio$ cat file1.txt
hello world is
new is change
good deeds work
vrk@vrk-VirtualBox:~/testingpurpose/fileio$ ./main file1.txt
Pattern not foundvrk@vrk-VirtualBox:~/testingpurpose/fileio$
```

```
vrk@vrk-VirtualBox:~/testingpurpose/fileio$ cat file1.txt
hello world is
new is change
good deeds work
ould is work
vrk@vrk-VirtualBox:~/testingpurpose/fileio$ gcc app.c -o main
vrk@vrk-VirtualBox:~/testingpurpose/fileio$ vi app.c
vrk@vrk-VirtualBox:~/testingpurpose/fileio$ gcc app.c -o main
vrk@vrk-VirtualBox:~/testingpurpose/fileio$ ./main file1.txt
Pattern found at line:ould is work
```

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/InputandOutput/Exercise6/out$ ./main /home/vanshit/internship/git/vanshit_kamdar_idp/InputandOutput/Exercise6/file1.txt
Pattern found at line:ould is work
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/InputandOutput/Exercise6/out$
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/InputandOutput/Exercise6/out$
```

Q7)
Functions like isupper can be implemented to save space or to save time. Explore both Possibilities.

```
vrk@vrk-VirtualBox:~/testingpurpose/fileio$ ./main

Number of upper case present in the sentence is : 3
vrk@vrk-VirtualBox:~/testingpurpose/fileio$
```

Q8)
Write a private version of scanf analogous to minprintf from the previous section.

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/InputandOutput/Exercise8/out$ ./main
enter integer number=10
number= 10

enter float number=11.56
number= 11.560000

enter string number=hello
string= hello
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/InputandOutput/Exercise8/out$
```

Staticanddynamiclibrary

Static library:

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise1$ ar rcs libsample.a adddemo.o add.o div.o mul.o sub.o
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise1$ ls
add.c  adddemo.c  adddemo.o  add.o  div.c  div.o  head.h  libsample.a  mul.c  mul.o  sub.c  sub.o
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise1$ gcc add.o -o main -L . -lsample
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise1$ ls
add.c  adddemo.c  adddemo.o  add.o  div.c  div.o  head.h  libsample.a  main  mul.c  mul.o  sub.c  sub.o
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise1$ ./main
```

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise1$ ./mai

10 + 20 = 30
10 - 20 = -10
10 * 20 = 200
10 / 20 = 0vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exerci
```

Dynamic library:

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ vi adddemo.c
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ vi add.c
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ vi sub.c
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ vi mul.c
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ vi mul.c
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ vi div.c
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ vi adddemo.c
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ vi head.h
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ ls
add.c  adddemo.c  div.c  head.h  mul.c  sub.c
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ gcc -c add.c sub.c div.c mul.c -fpic
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ ls
add.c  adddemo.c  add.o  div.c  div.o  head.h  mul.c  mul.o  sub.c  sub.o
```

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ gcc *.o -shared -o libsample.so
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ ls
add.c  adddemo.c  add.o  div.c  div.o  head.h  libsample.so  mul.c  mul.o  sub.c  sub.o
```

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ gcc adddemo.c -c
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ ls
add.c  adddemo.c  adddemo.o  add.o  div.c  div.o  head.h  libsample.so  mul.c  mul.o  sub.c  sub.o
```

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ gcc -o main adddemo.o -L. -lsample
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ ls
add.c  adddemo.c  adddemo.o  add.o  div.c  div.o  head.h  libsample.so  main  mul.c  mul.o  sub.c  sub.o
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ ./main
./main: error while loading shared libraries: libsample.so: cannot open shared object file: No such file or directory
```

```
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ export LD_LIBRARY_PATH=:/home/vanshit/internship/git/vanshit_kamdar_idp/stat
icanddynamiclibrary/exercise2
vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$ ./main
10 + 20 = 30
10 - 20 = -10
10 * 20 = 200
10 / 20 = 0vanshit@66JC9F2-Desk:~/internship/git/vanshit_kamdar_idp/staticanddynamiclibrary/exercise2$
```