COP290 (DESIGN PRACTICES)
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GROUP- 4

./Top has in total six sub-directories- 1,2,3,4,exe,obj and a C program with main function.

./Top/1 has mySqr.c which takes a number as an input and give its square as an output.

./Top/2 has myPythonInC.c which print current date, time and day.

myApp, mySqr.c and myPythonInC.c are those same files given to as in problem statement.

./Top/3 has myPattern.c which takes a number and return its factorial. This program is coded in C.

./Top/4 has graphic.c which plots the dynamics of two balls colliding elastically on the floor and to the walls. This is python embedded in C.

./Top/obj contains all the object files of

./Top/exe contains the final executable

There is a make file in ./Top which recursively call 'make' in all the sub directories

For creating a object file from C file I used the command 'gcc -c myApp.c' for 'myApp.c' which created a object file 'myApp.o' similarly 'gcc -c mySqr.c' created 'mySqr.o' for mySqr.c and 'gcc -c myPattern.c' created 'myPattern.o' for 'myPattern.c'

Creating a object file for Python embedded in c file, I used the following string (specific to my computer having macOS)
'-I/Library/Frameworks/Python.framework/Versions/3.7/include/python3.7m'
'gcc -I/Library/Frameworks/Python.framework/Versions/3.7/include/python3.7m -c myPythonInC.c' created a object file named 'myPythonInC.o' for 'myPythonInC.c'
Similarly, 'gcc -I/Library/Frameworks/Python.framework/Versions/3.7/include/python3.7m -c graphic.c' created a object file named 'graphic.o' for 'graphic.c'

Finally, I linked all the object files created to make the final executable and stored it in ./Top/exe. Compilation string for python embedding in C (specific to my macOS system)-
'-L/Library/Frameworks/Python.framework/Versions/3.7/lib -lpython3.7m'
'gcc ./obj/*.o -o App -L/Library/Frameworks/Python.framework/Versions/3.7/lib -lpython3.7m' created the final executable named 'App'.

Command I used to run the final executable './App'

NOTE: My computer has matplotlib which will be required to show/run the output of my program in ./Top/4 i.e. 'graphic.c', If your system doesn't have this you may install this using the following code-

‘python3 -mpip install matplotlib’ for macOS

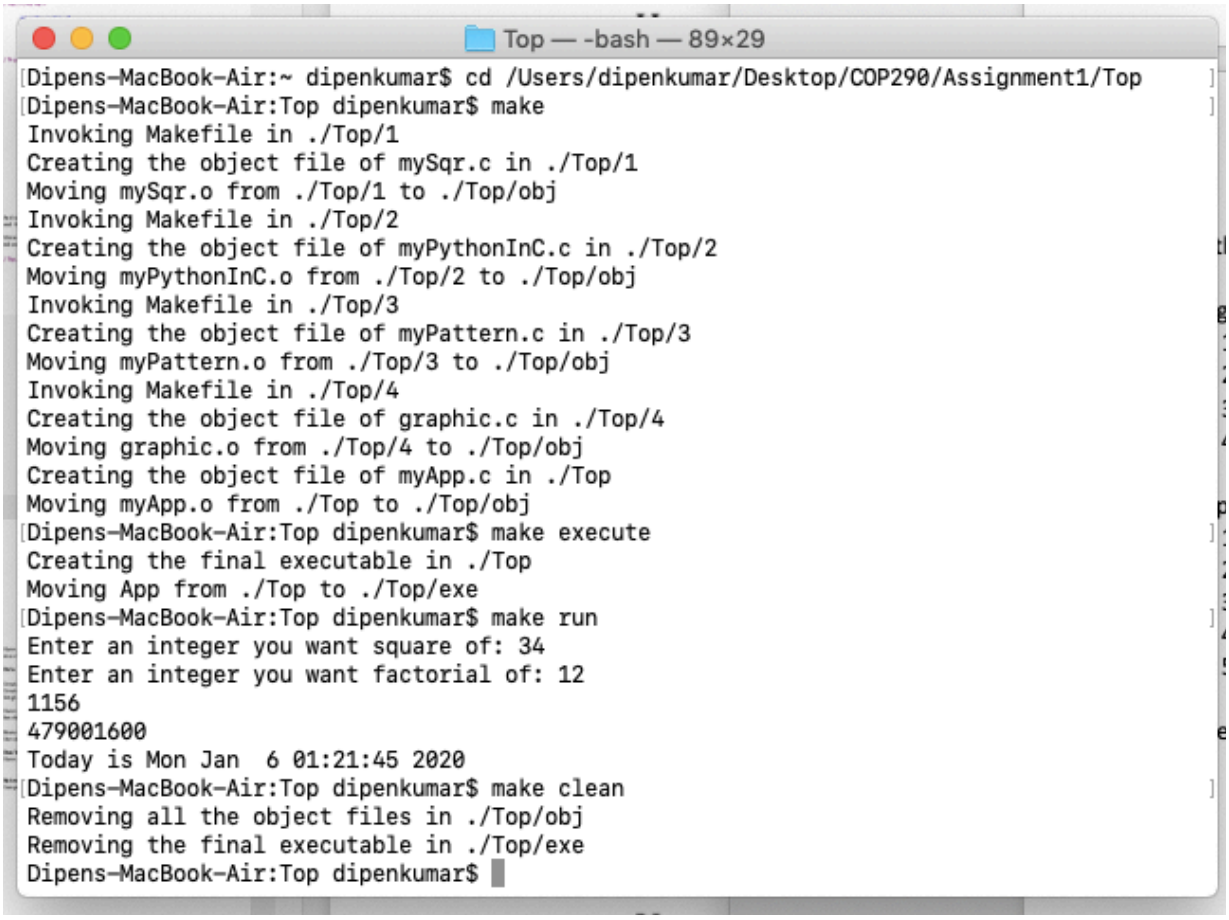
Targets in Makefile-

1. all: creates a object file and moves it to ./Top/obj
2. execute: creates the final executable and moves it to ./Top/exe
3. run: runs the final executable
4. clean: cleans all object files from ./Top/obj and the final executable from ./Top/exe

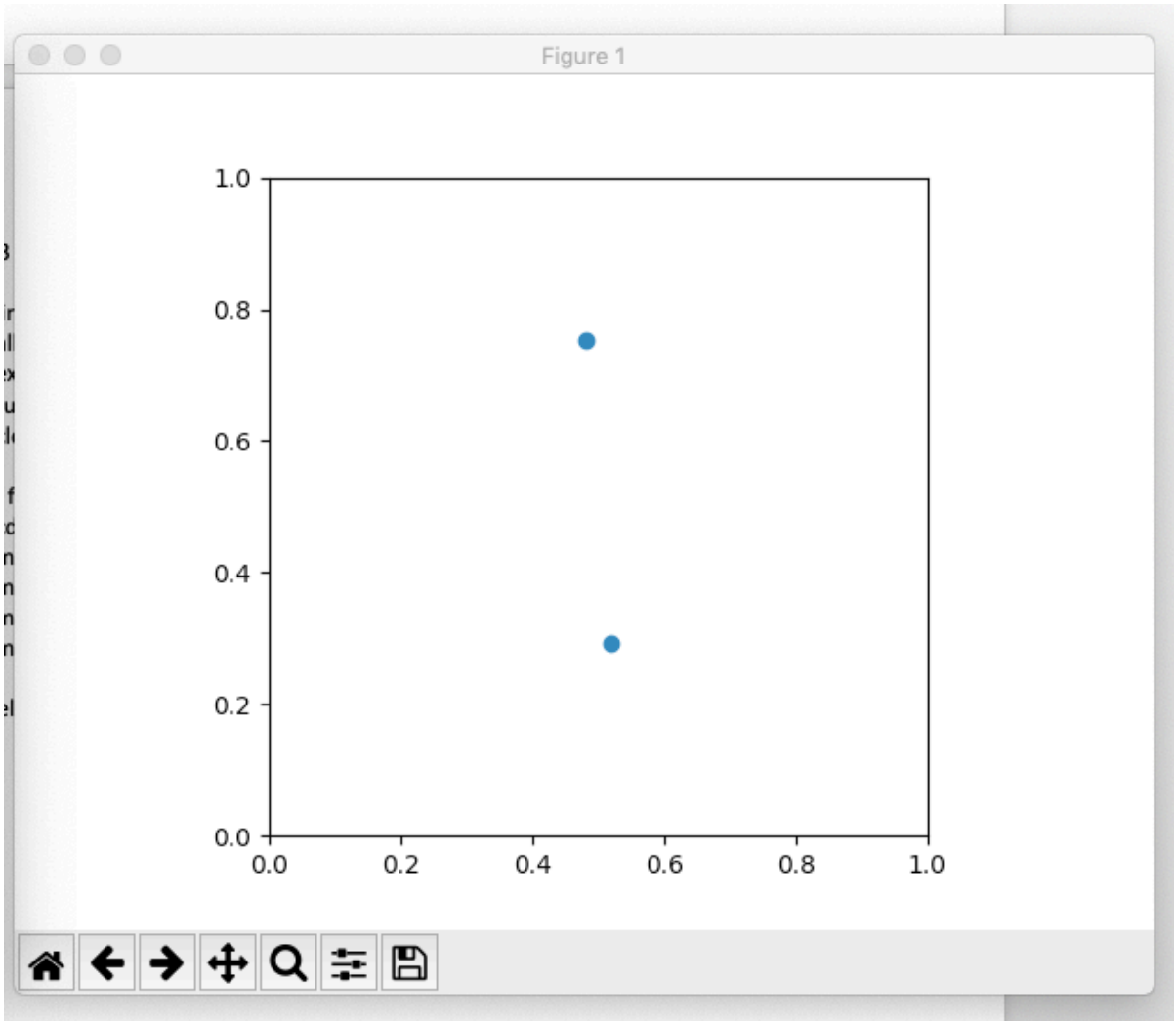
Steps to follow to run my program-

1. cd ./Top //go to ./Top
2. make //create object files and move it to ./Top/obj
3. make execute // creates the final executable and moves it to ./Top/exe
4. make run // runs the final executable
5. make clean //clear ./Top/obj and ./Top/exe directories to empty

Given below is the snapshot of my terminal where it did above mention commands-



As clearly seen in the above photo after we did make run-
mySqr.c runs to give square of 34 equals to 1156
myPattern.c runs to give factorial of 12 equals to 479001600
myPythonInC.c gives the current day, date and time
graphic.c plots the dynamics of two balls in matplotlib shown below-



Thank you