Assignment One

Create a Directory Top

Under this create 4 sub directories 1,2,3 4

In each of these sub directories, create a small C function: An example is given below:

./Top/1/mySqr.c

```
int mySquare(int x){

    return x*x;

}
```

./Top/2/myPythonInC.c

```
#define PY_SSIZE_T_CLEAN
#include <Python.h>

int myPythonInC(int argc, char *argv[])
{
   wchar_t *program = Py_DecodeLocale(argv[0], NULL);
   if (program == NULL) {
      fprintf(stderr, "Fatal error: cannot decode argv[0]\n");
      exit(1);
   }
   Py_SetProgramName(program);  /* optional but recommended */
   Py_Initialize();
   PyRun_SimpleString("from time import time,ctime\n"
                      "print('Today is', ctime(time()))\n");
   if (Py_FinalizeEx() < 0) {
      exit(120);
   }
   PyMem_RawFree(program);
   return 0;
}
```

And similarly with other programming languages or scripts in sub directories 3 and 4.

Write the application in the parent directory --- something similar to the following:

./Top/myApp.c

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

```
extern mySquare();
extern myPythonInC();

int main(int argc, char *argv[]){

    int a=3,b;

    b= mySquare(a);
    printf("%d\n",b);
    myPythonInC(1,argv);
}
```

Have a makefile in each directory of this hierarchy. The Makefile in ./Top should recursively call ***make*** in all the sub directories.

Do's:

Create object files in a subdirectory called obj
Create final executable in a subdirectory called exe
Set global options only in the parent

Have multiple targets in your makefile (for example clean, all, RUN, only certain functions etc –be creative ☺)

Brownie Points:
Use *shell* creatively

Don'ts:
Have a single Makefile replicated in all directories.

Notes:
Compilation string for python embedding in C (this is machine specific)
-I/usr/include/python3.6 -lpython3.6m