

## 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**