CSE 382: Programming tools

Assignment 6: Using the make build tool

Objectives

- Learn to manage large projects using make tool
- Automate the build process using make tool

Introduction: **The process of building a program is managed by build tools.** The build utility typically needs to compile the various files, in the correct order. The make build tool is used to manage large projects. It automates the build task. This tool supports C/C++ languages. It is readily available in Ubuntu.

Example: In order to learn this tool follow the following instructions(use vi editor to write the source code).

1. Create a directory "makedemo".

   mkdir makedemo

2. Enter this directory

   cd makedemo

3. Create a file called main1.cpp and paste the following code in it:

```
#include "iostream"
#include "func.h"
using namespace std;
int main()
{
      function();
      function1();
      return 0;
}
```

4. Create a file called function1.cpp and paste the following code in it:

```
#include "iostream"
using namespace std;
extern void function();
void function1()
{
      cout<<"I am fine in function1";

}
```

5. Create a file called function.cpp and paste the following code in it:

```
#include "iostream"
using namespace std;
void function()
{
      cout<<"I am fine in function2";
}
```

6. Create a file called func.h and paste the following code in it:

```
extern void function();
extern void function1();
```

7. Create a file called Makefile and paste the following code in it:

```
all: all1 main1
    ./main1

all1:  main.o function.o function1.o
    g++ main.o function.o function1.o -o main1

main.o:  main.cpp
    g++ -c main.cpp

function.o: function.cpp
    g++ -c function.cpp

function1.o: function1.cpp
    g++ -c function1.cpp
```

8. On terminal type make all

Assignment: Write a program to take a set of numbers as input using dynamic memory allocation and it should perform the following tasks:

(i) Create a directory makeprog2.
(ii) Your main() program should be in main1.cpp file.
(iii) Create a function binary() in bin.cpp file to perform binary search of a particular number.
(iv) Create a function bub_sort() in bub.cpp file to sort the numbers.
(v) Create a function del()in del.cpp to delete a particular number from the list. If number dosn't exist print "Number doesnot exist".
(vi) Create a function ins() in ins.cpp to insert a number in a particular position in the list.
(vii) You should use the header file numprocess.h to call the functions binary(), bub_sort(), del(), ins().
(viii) Create Makefile to compile and run your program and to remove all object files after the task is finished.

Note: You are not allowed to used inbuilt functions for implementing binary(), bub_sort(), del() and ins().

```
Enter number of elements 10
Enter 10 numbers
10
25
1
6
22
11
89
7
15
25
```

```
   Please enter your choice:
      Enter 1 to perform binary search
      Enter 2 to perform bubble sort
      Enter 3 to delete a particular number
      Enter 4 to insert a number in a particular position
      Enter 5 to exit
      1
   Enter the number you want to search 15
15 is located at position 9

   Please enter your choice:
      Enter 1 to perform binary search
      Enter 2 to perform bubble sort
      Enter 3 to delete a particular number
      Enter 4 to insert a number in a particular position
      Enter 5 to exit
       2
List of sorted numbers: 1 6 7 10 11 15 22 25 28 89

   Please enter your choice:
      Enter 1 to perform binary search
      Enter 2 to perform bubble sort
      Enter 3 to delete a particular number
      Enter 4 to insert a number in a particular position
      Enter 5 to exit
       3
Enter the number to delete: 1
The new list after deletion: 10 25 6 22 11 89 7 15 25
   Please enter your choice:
      Enter 1 to perform binary search
      Enter 2 to perform bubble sort
      Enter 3 to delete a particular number
      Enter 4 to insert a number in a particular position
      Enter 5 to exit
       4
Enter the number you want to insert: 90
Enter the position you want the number to get inserted: 1
The new list is: 90 10 25 1 6 22 11 89 7 15 25
```

Evaluation criteria:
We will start evaluation at 12:30 PM. By that time you should have executed binary search and bubble sort as instructed in the program.Use of Makefile is mandatory.