National University of Computer and Emerging Sciences

Laboratory Manual
For

Operating Systems Lab

(BCS-4F)

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Lab Task [Makefile]

Create 3 files

- main.c
- functions.c
- header.h

header.h file contains following function prototypes

```
void sort(int array[], bool order);
void findHighest(int array[], int postion);
void print(int array[]);
```

functions.c file contains following 3 functions along with their logic

```
void sort(int array[], bool order) {
    > sort in ascending order if order is true
    > sort in descending order if order is false
}

void findHighest(int array[], int nth){
    > find nth highest value
    if nth = 2 find 2nd highest value from the array
}

void print(int array[]){
    > print all elements in the array
}
```

In **main.c** you will accept command line arguments including 3 things

- an array of integers
- order of sort (1 for ascending order and 0 for descending order)
- nth position to get the nth highest number from the array

You can add an int size parameter in function definitions for array size.

Use makefile to execute all these files. Your **Makefile** will look like this.

```
main: main.o functions.o
    gcc main.o functions.o -o main

main.o: main.c
    gcc -c main.c

functions.o: functions.c
    gcc -c functions.c

clean:
    rm *.o main
```

Example:

Input: ./main 11 15 13 12 16 14 18 19 20 17 1 4

Output:

```
Array Element:  11 15 13 12 16 14 18 19 20 17
Sorted Elements:  11 12 13 14 15 16 17 18 19 20
The 4 highest value in the array is: 17
```

Helpful Links:

[Makefile Tutorial]

Linux executables:

[How to make linux executables]

```
chmod +x my_script.sh
```