National University of Computer and Emerging Sciences

Laboratory Manual

for

Operating Systems Lab

Course Instructor	Mr. Raziuddin
Lab Instructor(s)	Usman Anwer
Section	BCS-4D
Semester	Spring-24

Department of Computer Science

FAST-NU, Lahore, Pakistan

Command Line Arguments:

Command-line arguments are a way to pass data to the program. Command-line arguments are passed to the main function. Suppose we want to pass two integer numbers to the main function of an executable program called a.out. On the terminal write the following line:

./a.out 1 22

./a.out is the usual method of running an executable via the terminal. Here 1 and 22 are the numbers we passed as command-line arguments to the program. These arguments are passed to the primary function. In order for the main function to be able to accept the arguments, we have to change the signature of the primary function as follows:

int main(int argc, char *arg[]);

Ⓟ   argc is the counter. It tells how many arguments have been passed.
Ⓟ   arg is the character pointer to our arguments.

argc in this case will not be equal to 2, but it will be equal to 3. This is because the name ./a.out is also passed as command line argument. At index 0 of arg, we have ./a.out; at index 1, we have 1; and at index 2, we have 22. Here 1 and 22 are in the form of character string, we have to convert them to integers by using a function atoi. Suppose we want to add the passed numbers and print the sum on the screen:
cout<< atoi(arg[1]) + atoi(arg[2]);

Question 1: Write a C or C++ program that accepts a file name and a substring as command line argument and prints the no of occurrences of substring in the given file on the console.If the file does not exist, print some error on the screen.

The file name is question1.txt with the following content:

"Hello, this is the command line argument practice and my second day in the lab of operating systems. I am enjoying it the alot. Hello, this is the command line argument practice and my second day in lab of operating systems. I am enjoying it the alot.Hello, this is the command line argument practice and my second day in the lab of operating systems. I am enjoying it the alot."

Question 2: (MakeFile)

Create 3 files,

- header.h
- array.cpp
- main.cpp

header.h contains the declaration of the following functions

```
int sum(int arr[])

int avg(int arr[])

int max(int arr[])

int min(int arr[])
```

while **array.cpp** contains the definition of the above functions.

and **main.cpp** contains the main function to run the above code.

You are required to take the array from command line arguments.

Question 3: Write a program that uses two processes. One is called a parent and the other is called a child. The child read the same file (mentioned above) and finds the total number of vowels (a, e, i, o , u) in the file.

While child is processing, Parent wait for child to finish with code and prints 'Program completed' message.

Note: Use Fork and File handling.