CS342301: Operating System

MP1-System Call

1. Goal

1. Understand how to work under Linux platform.

2. Understand how system call are done by OS.

3. Understand the difference of user space and kernel space memory.

2. Assignment

1. Enhance NachOS

    a). Implement a console I/O system call.

```
void PrintInt(int number)
```

        Output the number and a line separator to the console.

    b). Implement four file I/O system call.

```
OpenFileId Open(char *name);
```

        Open a file with the name, and returns its corresponding OpenFileId.

        Return -1 if open fails.

```
int Write(char *buffer, int size, OpenFileId id);
```

        Write "size" characters from buffer into the file.

        Returns number of characters actually written to the file.

        If attempt writing to an invalid id, return -1.

```
int Read(char *buffer, int size, OpenFileId id);
```

        Read "size" characters from the file and copy them into buffer.

        Returns number of characters actually read from the file.

        If attempt reading from an invalid id, return -1.

```
int Close(OpenFileId id);
```

        Close the file with id.

        Return 1 if successfully close the file, 0 otherwise.

  ＊ All your implements should not use any IO functions from standard libraries (e.g. printf(), cout, fopen(), fwrite(), write(), etc.).

2. Other working items

    a) Trace System Call

        Explain how system calls go through Nachos in detail.

    b) Report

        Explain your work (e.g. modification of the code, team member contribution, etc.)

  ＊ Please save them as PDF format.

3. Grading

1. Demo – 60%

     a) Console I/O system call – 20%

     b) File I/O system call – 40%

2. Trace system call – 25%

3. Report – 15%

4. Reminder

1. iLMS

     a) You do not have to upload your NachOS to iLMS, but we will use your latest modification time
     as your submission time.

     b) Please upload your Trace system call and Report in PDF format to iLMS.

2. Demo policy

     a) All demo will be performed on our server.

     b) You are responsible to make sure your NachOS works on our server.

     c) Limit 10 mins for each team, so please be well prepared for it.

3. Please refer to syllabus for late submission penalty.

4. 0 will given to cheaters. Do not copy & paste!

5. Feel free to ask questions on iLMS!