Lab Performance Test 1 Syllabus

Course Outcome

CO1: Understanding the practical approach of how a compiler works.

CO2: Understanding how LEX and YACC is used for lexical and syntax analysis.

Marks Distribution:

Lab Class	Questions	Question Types	Time	Easy	Marks	CO
Lab Class 1	Q1	Stages of C compiler	8 min	Easy	100	CO1
Lab Class 2	Q2 (a)	LEX Intro (FLEX)	10 min	Easy	70	CO2
	Q2 (b)	YACC Intro (BISON)	20 min	Hard	30	

Reading Assignment (Optional):

Book 1: Compilers 2nd Ed - Principles, Techniques, & Tools - Alfred V. Aho, Monica S. Lam, Ravi Sethi, Jeffrey D. Ullman - Pearson (2007).

Topic Name	Book	Chapter	Topics
Lexical Analysis	Book 1	Chapter 3	3.5 (FLEX)
Syntax Analysis	Book 1	Chapter 4	4.9 (BISON)

Code Repository (17 Series)

1. **Lab Class 1:** https://github.com/nahin100/17-CSE4102/tree/main/Lab%201
2. **Lab Class 2:** https://github.com/nahin100/17-CSE4102/tree/main/Lab2

Code Repository (18 Series)

1. **Lab Class 1:** To be added.
2. **Lab Class 2:** To be added.

Problem Sets:

1. **Stages of C compiler:** Consider following code snippet:

```
#include<math.h>
#define INTEGER int

int main()
{
   INTEGER a=10;
   INTEGER b=20;
   return 0;
```

```
}
```

Show output files of all stages along with dumped object file generated by C compiler along with Makefile.

2. **LEX (FLEX) and YACC (BISON):** Consider following code snippets:

01.

```
RUET CSE 17
CUET CSE 18
BUET EEE 19
```

02.

```
University of Dhaka
University of Rajshahi
University of Chittagong
```

03.

```
001-180
//Comment: will accept all inputs within range.
```

04.

```
Series: 16 series to 20 series
Department_Codes: 00 to 10
Roll_Numbers: 001 to 180

Format: (Series)(Department_Codes)(Roll_Numbers)
Accepted Inputs: 1703010, 2000001
//Comment: will accept all the roll numbers within
acceptable range.
```

a. Show a flex file which can tokenize given statements.
b. Show a bison file which can parse given statements.

Instructions for Question 2:

a. **For question a:** For given input, the lexical analyzer will reply `'input -> Token Name'` for the correct inputs.

   For example, for question 02 of 2, output will be `'University -> UNIVERSITY_NAME'` for `'University'` input.

b. **For question b:** For given input, the parser will reply `'Accepted'` for the correct statements.

   For example, for question 02 of 2, output will be `'Accepted'` for `'University of Chittagong'` input.

Regarding Extra Time:
If someone takes more than 10 minutes to submit his answer, then there will be mark penalty and following chart will be used to evaluate answers (Suppose exam starts at 9:30 AM):

	100% Marks	**70% Marks**	**0% Marks**
Q1	8 min (Submit at or before 9:38 AM)	8 min (Submit at or before 9:46 AM)	Submit after 09:46 AM
Q2a	10 min (Submit at or before 9:48 AM)	10 min (Submit at or before 9:58 AM)	Submit after 9:58 AM
Q2b + Lab Report	20 min (Submit at or before 10:08 AM)	20 min (Submit at or before 10:28 AM)	Submit after 10:28 AM

Questions:
Every student will be given different question sets based on Roll number. Link to Google form will be given 1 minute before the lab test. Students will have to submit their answers to Google Classroom.

Upload Instructions:

1. **Separate Folders:** Create separate folders (also for Q2a and Q2b) for each question when uploading.
2. **Roll Number+Questions:** Add your Roll Number and paste given Questions to program files.
3. **Snapshots:** Take separate snapshots of the terminal which shows outputs [Run the program using command without adding ouput.txt: `a < input.txt`]. Do not fabricate the snapshots. If found, the student will get punished severely.
4. **Please rename your file/files with this format:** [Lab Performance Test No]_[Roll Number]_[Question No] (Example: `LPT1_1703060_Q2a`). Upload files to google classroom classwork.

- **Question 1:** Submit both output files and Makefile.
- **Question 2:**
  a. **Tokenize:** Submit Flex file, Makefile, input and output text files.

  b. **Parsing:** Submit Flex file (Different from the Flex file submitted for Tokenization), Bison file, Makefile, input and output text files.

5. **Warning:**

   a. **Do not submit the `.exe` file. Google Drive may block the file and the zipped folder cannot be downloaded/examined by the examiner.**

   b. **Do not zip files using winrar or 7zip. Zip files using only the default windows zip file (.zip) feature (Instructions: Right Click on Folder -> Send to -> Compressed (zipped) folder).**

Tips:

1. Rather than writing everything from scratch, just write your codes within existing source code by editing them.

2. Ensure **Laptop Battery Backup + Internet**

3. **Use `mingw32-make` instead of `make` if you face any problem.**

Upload Lab Report Instructions:

1. **Use this Lab Report Template: Link**

2. **Please rename your lab report with this format:** [Lab Performance Test No]_[Roll Number]_Lab_Report (Example: LPT1_1703060_Lab_Report). Upload Lab Report to google classroom classwork.

3. **Lab Report Preparation:**
   - **Question:** Paste your question.
   - **Solution:** Paste contents of your source code. Bold out your own code.
   - **Output:** Paste your output snapshot.

4. **Do not cheat in the lab report. Cheating will cause severe punishments.**

Academic Honesty Policy:

1. Do not cheat and be honest.

2. Do not share your answers.

3. *If it is found that someone cheated by copying someone's program file/snapshot, then the original author of the files (If identified) will get severe punishments.*

4. *Someone found guilty of cheating will have his/her test score reset and will have to retake all the lab tests on only the hardest question sets.*
5. *If someone is aware of someone's/organized group's cheating, he/she is welcomed to send (anonymous) mail to the teacher. Teacher will keep the sender's identity secret and reward that sender heavily with extra marks.*