0088

National University of Computer and Emerging Sciences

Lahore Campus

Compiler Construction (CS4031)
Date: February 27th 2025
Course Instructor(s)
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Sessional-I Exam
Total Time (Hrs): 1
Total Marks: 30
Total Questions: 3

22L-6790 Roll No

6A Section

Student Signature

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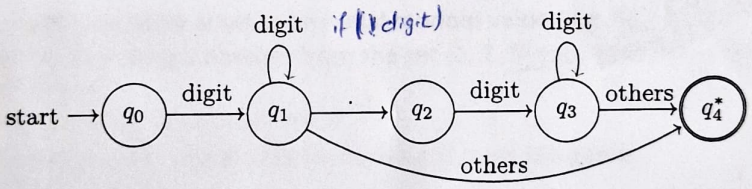
Attempt all the questions.

CLO # 3: Design and implement a simple lexical analyzer and Parser for a given CFG. (6) (4)

Q 1: Lexical Analyzer Transition Diagrams: Consider the transition diagram shown below, which recognizes numbers. Write a C function to implement the transition diagram for recognizing numbers. In the diagram, a digit represents any numeric character (i.e., [0-9]). **[10 Marks]**

Token set tok
int ini_state
while (state)
switch(state)
case 0:



Transition Diagram of numbers

Use the following function prototype:

```
bool isNum(char* str)
```

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CLO 2: **Analyze and recognize the significance of the several phases through which a typical program is compiled.**

Q 2: Give output of a lexical analyzer for the following C code: **[10 Marks]**

```
for (int i = 0; i <= 10; i++) {
    char letter,,
    num int;
    num = 12 34 56;
    printf("Hello world!");
}
```

Token pattern lexeme

CLO 3: **Design and implement a simple lexical analyzer and Parser for a given CFG.**

Q 3: Lexical Analyzer Regular Expressions: Give a transition diagram and a regular expression for the following token: An identifier is a string of letters and digits. It starts with a letter, and contains an odd number of digits **[5+5 Marks]**

stream of char
↓
lexical analyser
↓ stream of token
syntax analy
↓ syn tree