Midterm-1 (2nd term 2018-2019)
CSC 340
KSU

Student Name: [redacted]

Q1) a) Compare between C++ and Java with respect to reliability. (4 grades)

What language is better? Java

List features or constructs makes it so?

1) because chenk ~~the~~ index of the attay don't ~~dint~~ go out of bou
attay.

2) hight execution cost.

b) Compare between C++ and Java with respect to the cost of execution. (4 grades)

What language is better? C++

List features or constructs makes it so?

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Points ~~it~~ allowd to the user go out of bound of a

2) for C++ tranlstion for mchien langug , Java ~~tran~~ tranlst
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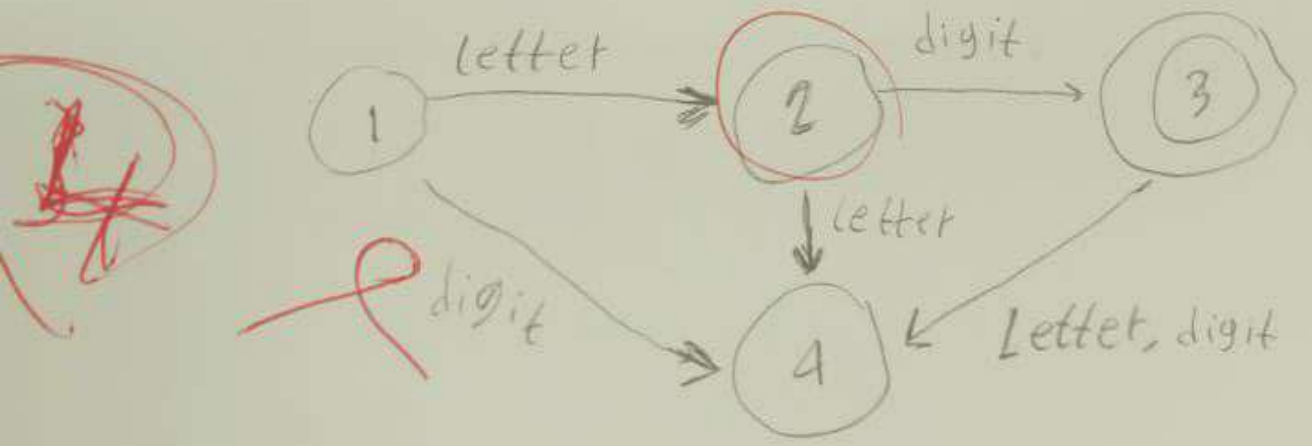
c) Discuss how the Von Neumann architecture influenced the design of modern programming languages. (4 grades)

1- get the inttaction
2- Loop forever
3- Process
4- decodeing
5- end Loop

Q2)

A) Design a DFA that accepts a string containing letter and digits where the string consists of at most two characters; the first character must be a letter (A-Z), while the second may be a letter or digit (0-9). (4 grades)

RE = Letter

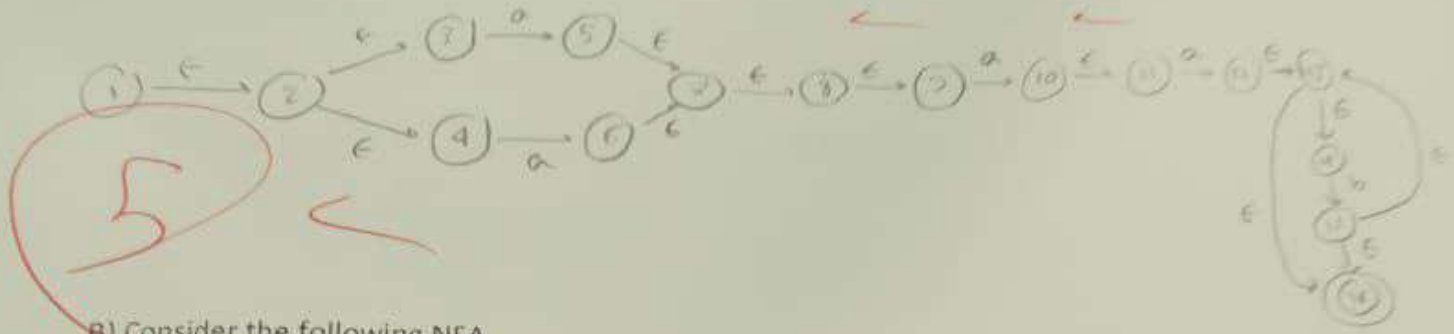


B) Write a regular expression that defines the token class identifier where an identifier can consist of at most two characters; the first character must be a letter (A-Z), while the second may be a letter or digit (0-9). (4 grades)

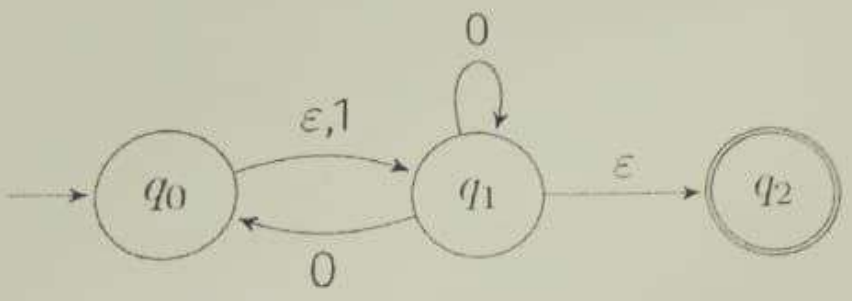
regular expressio is (Letter digit)

Q3) A) Convert the regular expression below into an NFA. (5 grades)

(a+b)*aab*



B) Consider the following NFA



1. Represent the NFA using a table. (3 grades)

	0	1	ε
q_0	—	q_1	q_1
q_1	$\{q_0, q_1\}$	—	q_2
q_2	—	—	—

2. What is the shortest string that would be rejected by the above NFA (2 grades)

zero is reject

Write an algorithm that accepts a string if it is accepted by the above NFA. (6 grades)

```
i = 0;
state = 0;
while (input[i]) {
  state = table[state, input[i++]];
}
if (state ∈ F)
  return "accept";
else
  return "reject";
```

4. Convert the above NFA into a DFA. (4 grades)