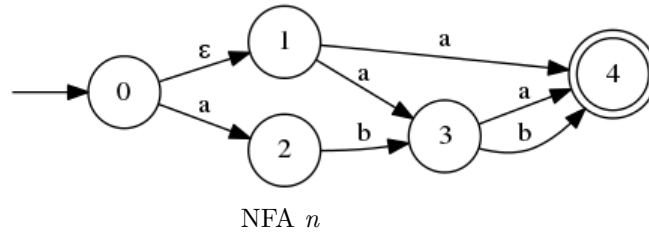**Assignment 1**

COP4020, 2015 Summer

Due by beginning of class, June 9th

Name: _____

(30 points) **Question 1:**

NFA n

For the above NFA n, we want to create an equivalent DFA d by creating states that represent mergers of elements from n. (Also commonly called "subset construction.")

Most of d has been created below, but there is still one empty node. Please indicate what states from n the empty node could have merged so that d recognizes the same regular expressions as n.

DFA d
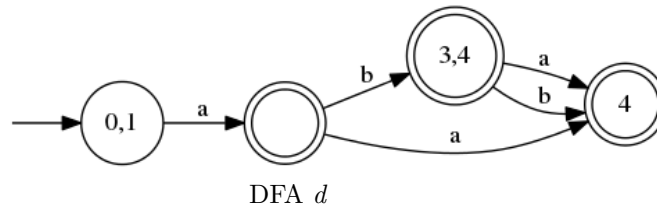
The presently empty node in d should contain the states: _____

(10 points) **Question 2:**

```
        section .data

msg:    db 'Hello␣COP4020!',10
msglen  equ $-msg

        global hello_world


        section .text

hello_world:

        mov rax,1
        mov rdi,1
        mov rsi,msg
        mov rdx,msglen
        syscall

        mov rax,60
        mov rdi,0
        syscall
```

Please circle the language that the above example code is written in:

- Intel X86_64 assembly
- C
- Erlang
- Haskell
- Pascal
- Scheme
- MIX assembly

(10 points) **Question 3:**

```
#!/usr/bin/escript

main(_) ->
    io:format("Hello␣COP4020!\n").
```

Please circle the language that the above example code is written in:

- Intel X86_64 assembly
- C
- Erlang
- Haskell
- Pascal
- Scheme
- MIX assembly

(10 points) **Question 4:**

```
module Main where

main :: IO ()
main = putStrLn ( "Hello␣" ++ "COP4020!␣!␣!" )
```

Please circle the language that the above example code is written in:

- Intel X86_64 assembly
- C
- Erlang
- Haskell
- Pascal
- Scheme
- MIX assembly

(10 points) **Question 5:**

```
#include <stdio.h>

int main(int argc, char **argv, char **envp)
{
  printf("Hello␣COP4020!\n");
}
```

Please circle the language that the above example code is written in:

- Intel X86_64 assembly
- C
- Erlang
- Haskell
- Pascal
- Scheme
- MIX assembly

(10 points) **Question 6:**

```
#!/usr/bin/gosh

(print "Hello␣COP4020!")
```

Please circle the language that the above example code is written in:

- Intel X86_64 assembly
- C
- Erlang
- Haskell
- Pascal
- Scheme
- MIX assembly

(10 points) **Question 7:**

```
program hello_world(output);

begin
  WriteLn('Hello␣COP4020!!')
end.
```

Please circle the language that the above example code is written in:

- Intel X86_64 assembly
- C
- Erlang
- Haskell
- Pascal
- Scheme
- MIX assembly

(10 points) **Question 8:**

```
TERM      EQU      19
          ORIG     1000
START     OUT      MSG(TERM)
          HLT
MSG       ALF      "HELLO"
          ALF      "␣CGS2"
          ALF      "600␣␣"
          ALF      "␣␣␣␣␣"
          END      START
```

Please circle the language that the above example code is written in:

- Intel X86_64 assembly
- C
- Erlang
- Haskell
- Pascal
- Scheme
- MIX assembly