

CSE105 HW 1 Due 4/10/17

1)  $\Sigma$  2 letters  $\{a, b\}$

a)  $\{w \in \{a, b\}^* \mid \exists y (w = yy)\}$

"The set of all strings  $w$  in  $\{a, b\}^*$  such that there exists some  $y$  where  $w = yy$  and  $y$  is a variable"

i) The empty string is not in the set because the first letter needs to match the second letter

ii) The set contains two of the same letters back to back  $\therefore$  one string is abab

iii) one example that won't fit in the set is abab

b)  $\{w \mid w \in \{a, b\}^* \} \circ \{w \mid w \in \{a, b\}^* \} = \{w \mid w \in \{a, b\}^* \}$  - all in  $\{a, b\}^*$   $\circ$  all in  $\{a, b\}^*$

i) the empty string is contained because  $\epsilon \circ \epsilon = \epsilon$

ii) one length 3 string in the set is aba

iii) all strings over  $\{a, b\}$  is contained  $\therefore$  there is no string not in this set

c)  $\{w \mid w \in \{a, b\}^* \} \cup \{w \mid w \in \{a, b\}^* \} = \{w \mid w \in \{a, b\}^* \}$

i) empty set is contained in

ii) one length 3 string is aba

iii) all strings are contained  $\therefore$  no string is not in the set

2) a) - Alphabet:  $\{5, 10, 25\}$

(coding input) using cent value of coins

- Set associated w/ problem:  $\{w \mid w \text{ is a nonempty string that sums to 25 cents or more}\}$

- Example of string in the language: 5, 10, 10

- Example not in the language: 10, 5

2 b) - Alphabet:  $\{R, G, B\}$

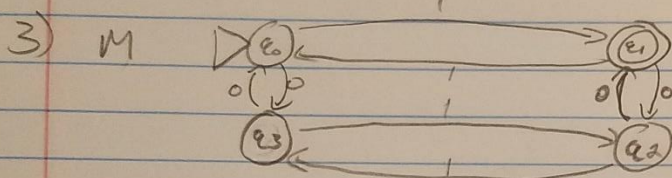
Coding Inpt: using letter representation for R, G, B

- Set associated w/ problem

$\{w | w \text{ is a string of R G B values}\}$   
nonempty

- Example of a string in the Language: R B B R

- Example not in the Language: R G B



a) The language recognized by M is the strings over  $\{0, 1\}$  that end at  $q_1$

b) Flipping bits will not be in  $L(M)$

example: 0, 1, 0  $\rightarrow$  1, 0, 1  
works doesn't work

c)  $M = (Q, \Sigma, \delta, q_0, F)$

$M = (\{q_0, q_1, q_2, q_3\}, \{0, 1\}, \delta, q_0, \{q_1\})$

Input	Output
$q_0, 0$	$q_3$
$q_0, 1$	$q_1$
$q_1, 0$	$q_2$
$q_1, 1$	$q_0$

Input	Output
$q_2, 0$	$q_1$
$q_2, 1$	$q_3$
$q_3, 0$	$q_0$
$q_3, 1$	$q_2$



#### Problem 4 A

```
Prelude> :cd C:\Users\amitn\Dropbox\College Spring 2017\CSE 105\Homework 1
Prelude> :load "HW1.hs"
[1 of 1] Compiling HW1                ( HW1.hs, interpreted )
Ok, modules loaded: HW1.
*HW1> evalDFA machine1 "011"
True
*HW1> evalDFA machine1 "01"
True
*HW1> evalDFA machine1 "000"
False
*HW1>
```

#### Problem 4 B

---

states 0,1,2,3,4

start = 0

accept states 1,2,3,4

q0 - 0 -> q0

q0 - 1 -> q1

q1 - 0 -> q0

q1 - 1 -> q3

q2 - 0 -> q0

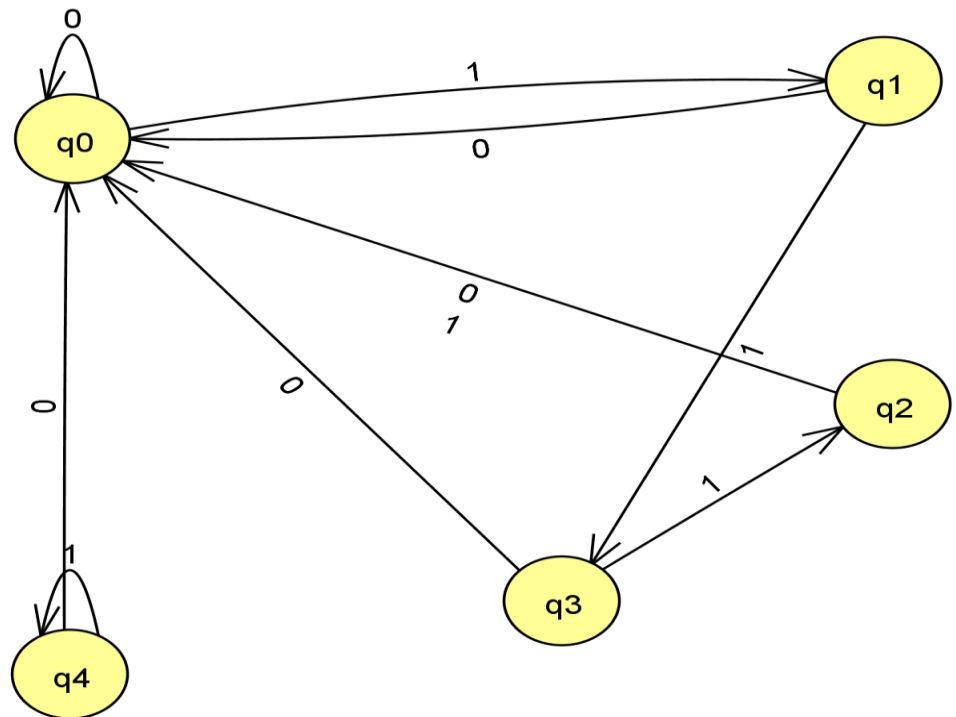
q2 - 1 -> q0

q3 - 0 -> q0

q3 - 1 -> q2

q4 - 0 -> q0

q4 - 1 -> q4



Problem 5: I did this assignment on my own. I completed the survey.

Blackboard Learn x CSE 105 (70 unread) x Gradescope | CSE 105 x CSE 105 (70 unread) x Gradescope | Dashbo... x Register Your Remote x HW1\_Sp17.pdf x

Secure | https://piazzo.com/class/0scoj7uoto9w?cid=77

Apps | submittes | AT&T Messages | Spring 2017 | Amit 5 Nijar Resume | Chicken in Creamy To... | University of Californi... | Jobs Applied to | Rajshri Food - YouTui... | ruchi bharani - YouTui... | Job Hunt

piozzo CSE 105 Q & A Resources Statistics Careers Feed 25 3 Amit Nijar join our group

Unread Updated Unresolved Following Question History

New Post Search or add a post...

PINNED

- Inst: One-on-one tutoring** 4/3/17  
This quarter, each of you is paired with a tutor who can provide additional one-on-one support. The tutor assignments
- Inst: Welcome to CSE 105!** 4/3/17  
The class website is at <https://cseweb.ucsd.edu/classes/sp17/cse105-ab/>. The first HW assignment is listed on the
- Inst: Class Website** 4/3/17  
<http://cseweb.ucsd.edu/classes/sp17/cse105-ab/#/>  
An instructor thinks this is a good note
- Search for Teammates!** 3/27/17  
18 Open Teammate Searches

TODAY

- Inst: Seat, Tutor, TA Assignments ...** 12:17PM  
Current seat, tutor, and TA assignments are available here: [http://www.piazzo.com/class\\_profile/get\\_re...](http://www.piazzo.com/class_profile/get_re...)
- Loading HW1.hs?** 11:25AM  
I am currently on the waitlist and working on Q4 part a. When I logged into the school account after installing a package  
1 Unresolved Followup
- Error when try to test the HW1** 10:51AM  
1 Unresolved Followup
- 5** 10:50AM  
Is making an adjacent matrix an acceptable representation of 5?
- Error when I type ghci HW1.hs** 12:56AM  
I opted not to download the haskell interpreter and am doing this on a puffy terminal instead. For problem 4 part a, att
- Discussion section swap** 12:44AM

20170410\_120644.jpg 20170410\_120636.jpg

### question

206 views

#### Participation

Just want to make sure I got it right. Wk1's participation is calculated by the wk1 review quiz and/or the clicker points for wk2 lecture and/or wk2's discussion point right?

active

edit good question 0 Updated 4 days ago by Anonymous

**S the students' answer**, where students collectively construct a single answer

Click to start off the wiki answer

**I the instructors' answer**, where instructors collectively construct a single answer

No, wk1's participation is from wk1's lecture/discussion and wk1's quiz.

thanks 0 Updated 4 days ago by Benjamin Cosman

#### followup discussions

for lingering questions and comments

- Resolved Unresolved
- Anonymous** 4 days ago  
and also we don't get extra participation? (Like if I got full score on review quiz and go to the lectures, I don't get 9/5?)
- Benjamin Cosman** 4 days ago  
Right, 5/5 is the maximum for each week.

#### Announcing 2017 Tech Tour: all-expenses paid trip to Silicon Valley

20170410\_120644.jpg 20170410\_120636.jpg

Show all

Type or talk to search

CSE 105 (70 un... Homework 1

1:11 PM 4/10/2017