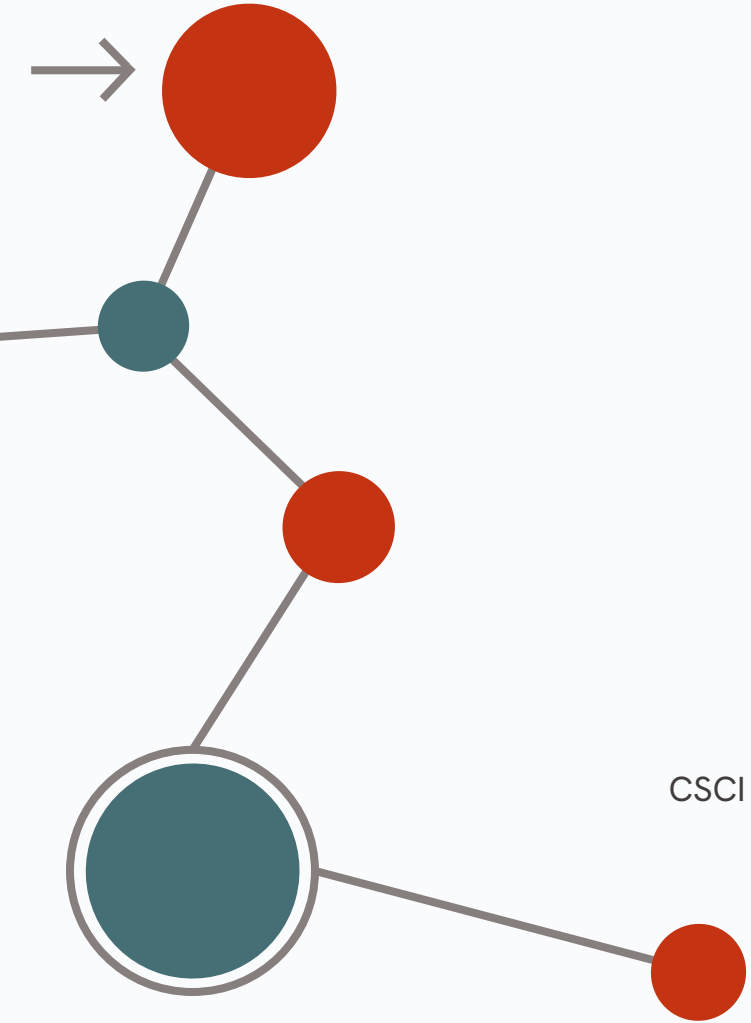

Batman vs Riddler

By: Nawrin Sikder, Syed Bukhari

CSCI 610 - W02 Theoretical Concepts in Computers and Computation

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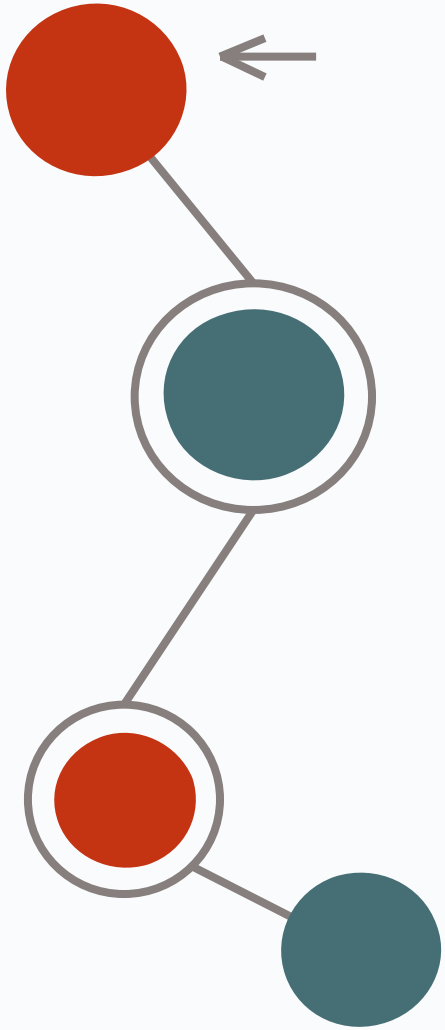


01

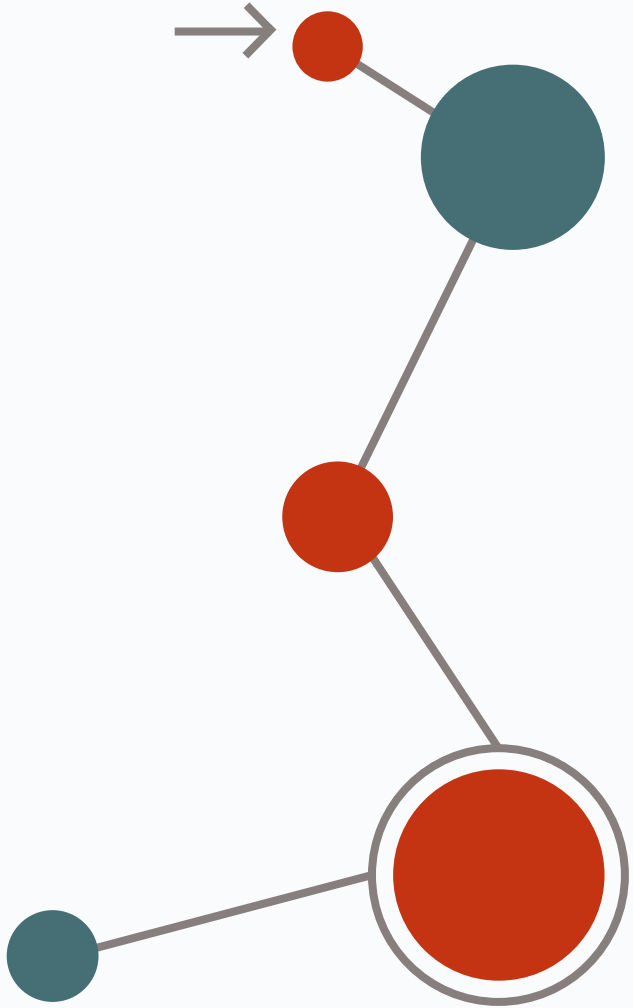
Batman vs Riddler Game

What is 'Batman vs Riddler' About?

- Batman vs Riddler is an game developed on Java that involves a set of riddles.
- The goal of the game is to combat The Riddler. The user must successfully complete all three levels of the game that are accompanied by three riddles.
- The user goes through three levels of different riddles and has three chances to get through to each level. If the user cannot complete a level after the third attempt, the game will go back to the previous level.
- If the user is unsuccessful, the game will end. If the user goes through all three levels, they will have beaten the Riddler!

02

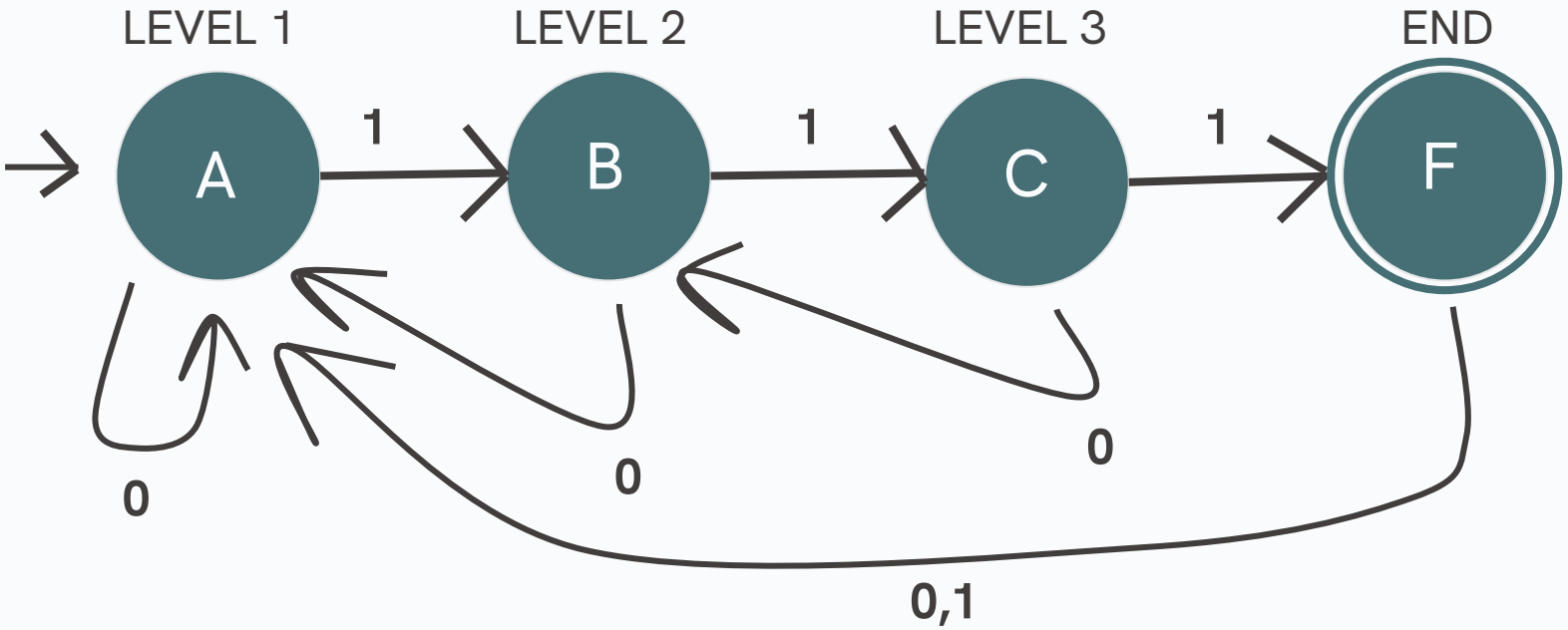
Finite State Machines



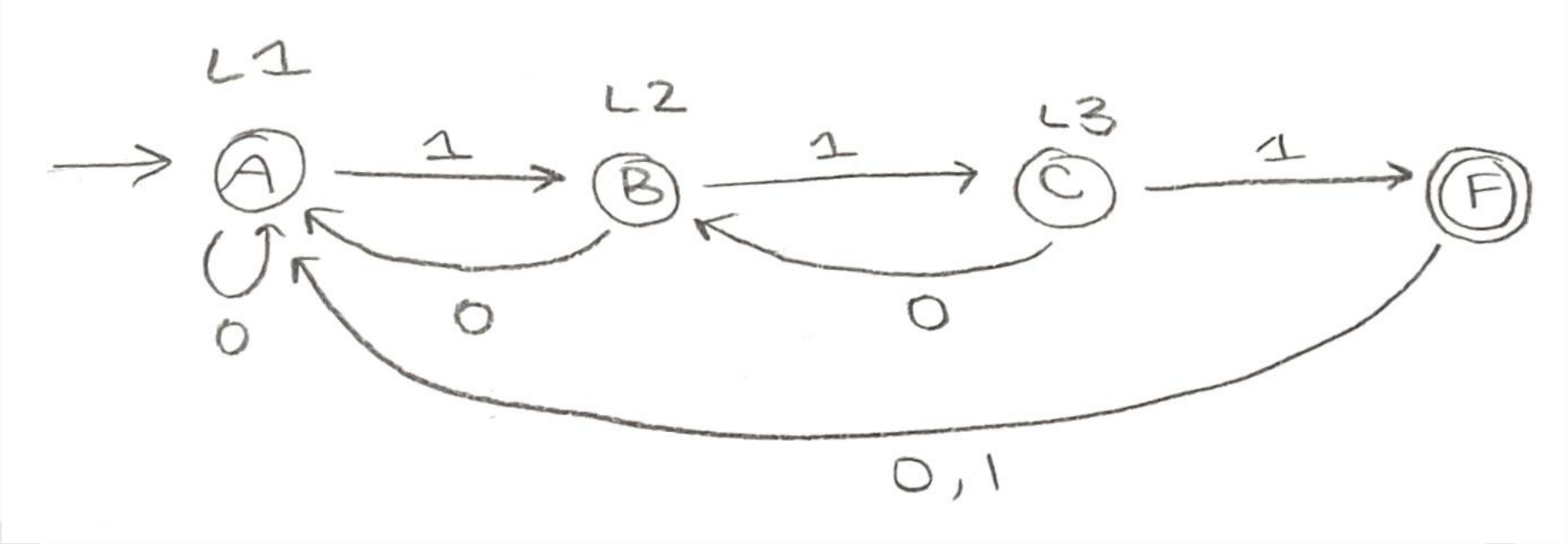
What are Finite State Machines? How does this relate?

- Finite state machines are machines that have an amount of possible states that are in a fixed state. They have a set of inputs that are able to change the state as well as a set of possible outputs (FSM_Intro Lecture, Page 3).
- In relation to Batman vs Riddler, there are a fixed number of levels that can be arrived at and a fixed number of destination points. This all depends on the users input of an answer.
- Finite state machines are machines that are limited in both power and memory (FSM_Intro Lecture Page 5).
- Like FSMs, Batman vs Riddler are limited in that it is not multifunctional.

Batman vs Riddler - DFA

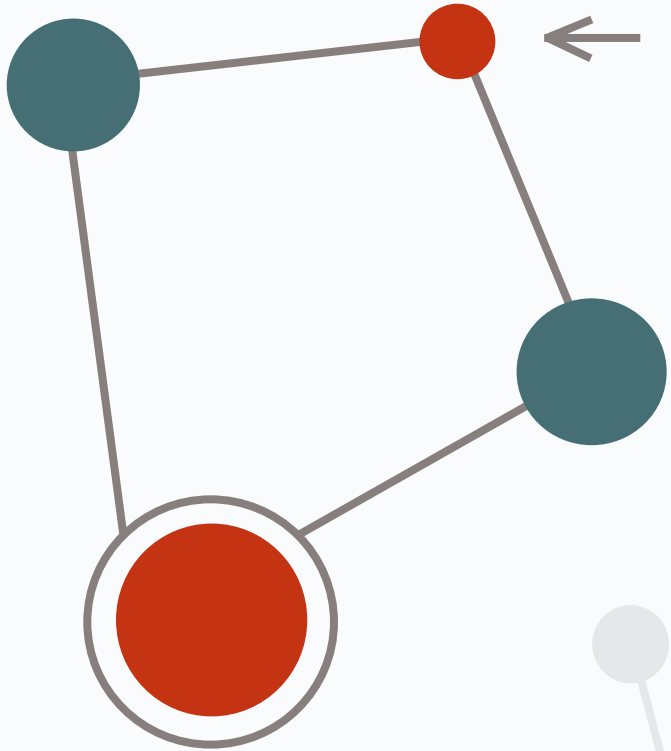


Batman vs Riddler - DFA



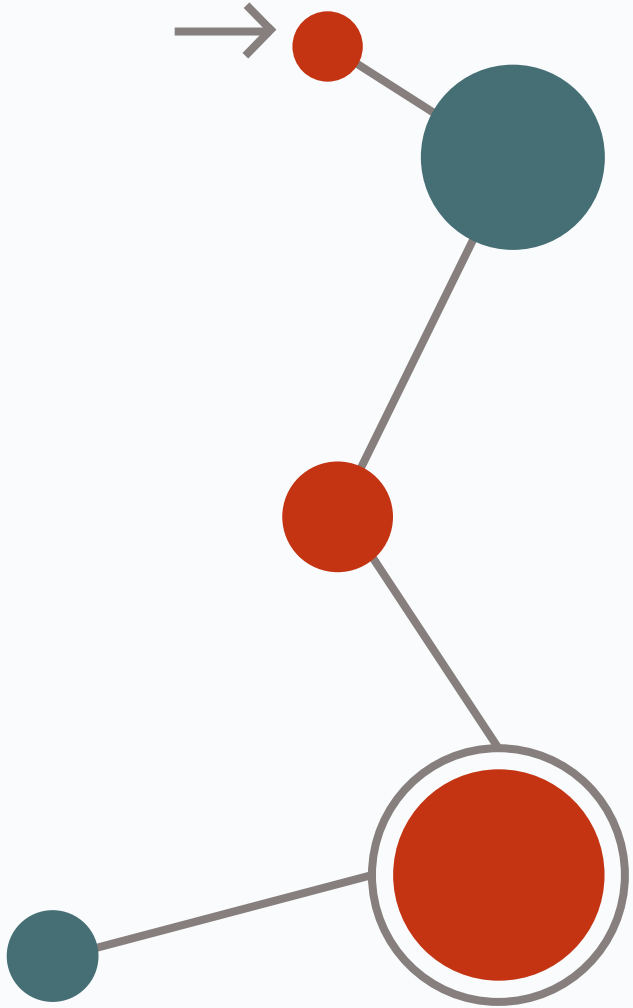
Why did We Choose FSMs?

- We chose finite state machines as our topic, due to the prevalence of machines in our daily activities.
- Even in the sense of entertainment, in game development, every game encompasses the idea of finite state machines in order to create an inviting and interactive experience for the user.

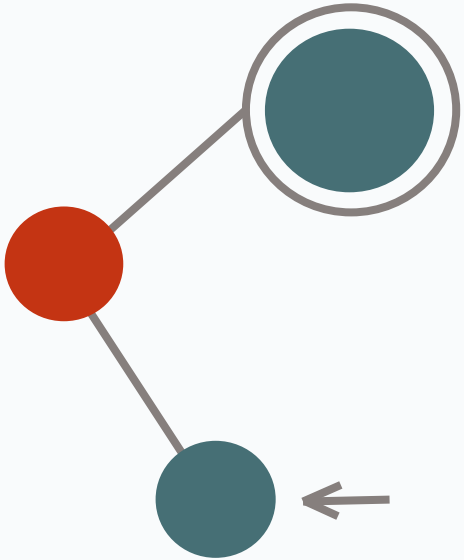


03

Breakdown of Levels



Breakdown of Levels



Level One: Introduces riddle

1. Attempt One
2. Attempt Two
3. Attempt Three

Successful? Continue On - Unsuccessful? Loops Level One

Level Two: Introduces Riddle

1. Attempt One
2. Attempt Two
3. Attempt Three

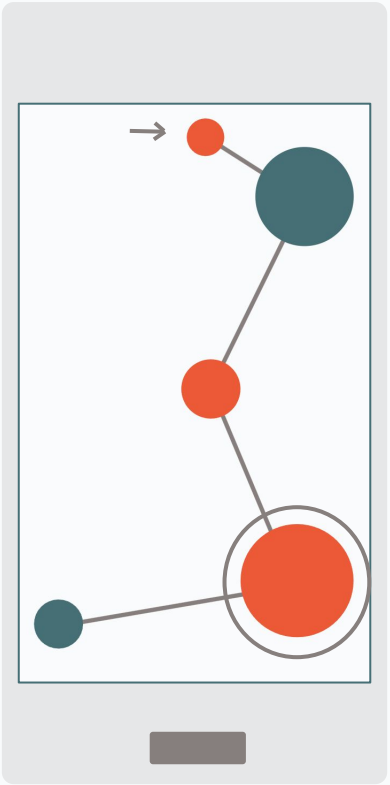
Successful? Continue On - Unsuccessful? Go back to Level One

Breakdown of Levels

Level Three: Introduces riddle

1. Attempt One
2. Attempt Two
3. Attempt Three

Successful? Continue On - Unsuccessful? Go back to Level Two



PNL Method

```
71  public pnlMain() {
72
73      //Image pimg = new ImageIcon(this.getClass().getResource("/BatmanIcon.png")).getImage();
74      //setIconImage(pimg);
75      //setIconImage(Toolkit.getDefaultToolkit().createImage(this.getClass().getResource("/BatmanIcon.png")));
76      riddlerGame gameIntroObj = new riddlerGame();
77
78      getContentPane().setLayout(null);
79      setIconImage(Toolkit.getDefaultToolkit().getImage(getClass().getResource("/BatmanIcon.png")));
80      setTitle("BatmanVsRiddler");
81      setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
82      setBounds(0, 0, 800, 660);
83      setResizable(false);
84      contentPane = new JPanel();
85      contentPane.setBorder(new EmptyBorder(5, 5, 5, 5));
86
87      setContentPane(contentPane);
88      contentPane.setLayout(null);
89
90      JLabel lblMainPic = new JLabel("");
91      lblMainPic.setVerticalAlignment(SwingConstants.TOP);
92      Image img = new ImageIcon(this.getClass().getResource("/BatmanFly444.png")).getImage();
93      lblMainPic.setIcon(new ImageIcon(img));
94      lblMainPic.setBounds(0, 0, 786, 200);
95      contentPane.add(lblMainPic);
96
97      JLabel lblIntro = new JLabel("");
```

PNL Method

```
79          setIconImage(Toolkit.getDefaultToolkit().getImage(getClass().getResource("/BatmanIcon.png")));
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93          lblMainPic.setIcon(new ImageIcon(img));
94          lblMainPic.setBounds(0, 0, 786, 200);
95          contentPane.add(lblMainPic);
96
97          JLabel lblIntro = new JLabel("");
98          lblIntro.setVerticalAlignment(SwingConstants.TOP);
99          lblIntro.setBounds(10, 211, 766, 62);
100         lblIntro.setFont(new Font("Calibri", Font.BOLD, 14));
101         lblIntro.setText(gameIntroObj.intro());
102         contentPane.add(lblIntro);
103
104         JButton btnPlay = new JButton("Play");
105         btnPlay.addActionListener(new ActionListener() {
```
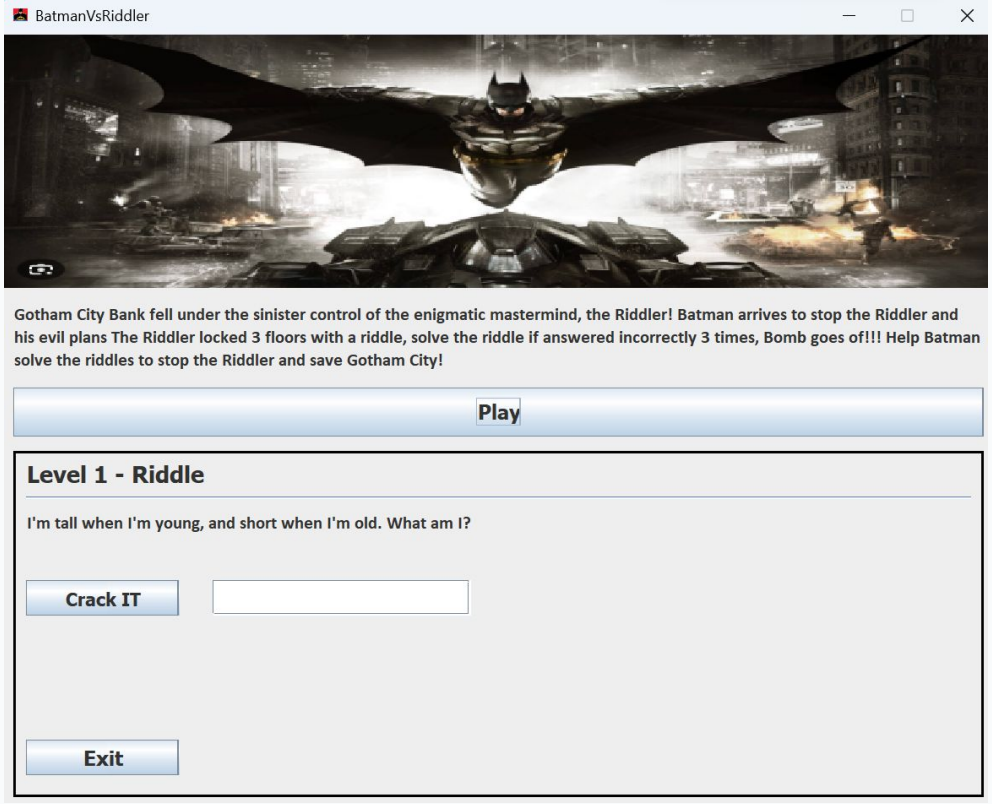

Level One

```
46  public Map<Integer, String> levelOne(String riddleAnswer)
47  {
48      Map<Integer, String> RiddleData = new HashMap<Integer, String>();
49
50          if(riddleAnswer.equalsIgnoreCase(answer1))
51          {
52              RiddleData.put(1, "Great Job!! one step closer to beating the Riddler!");
53
54          } else
55          {
56              RiddleData.put(-1, "BOOM!!! BOOM!!! You Lose");
57          }
58
59      return RiddleData;
60  }
61
```

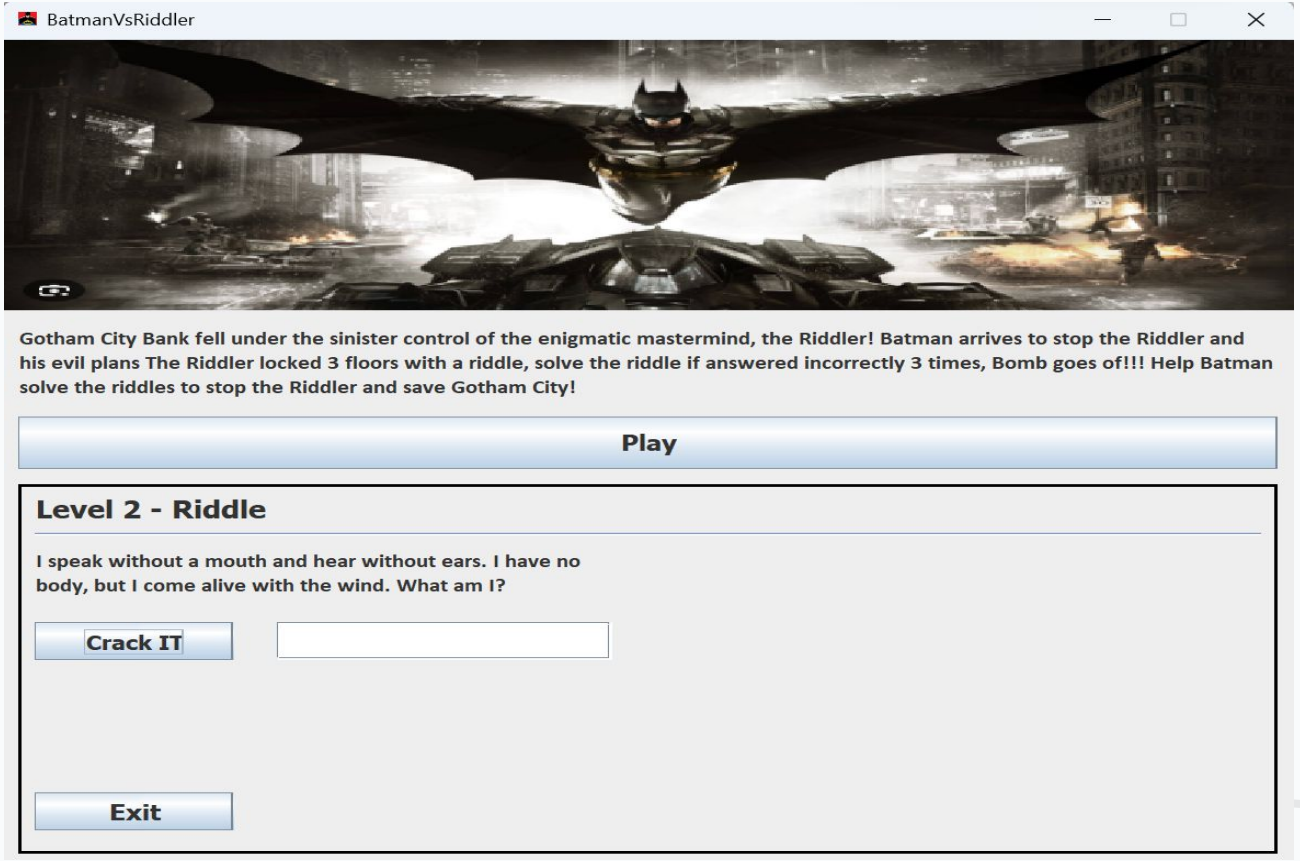
Level One


BatmanVsRiddler
Gotham City Bank fell under the sinister control of the enigmatic mastermind, the Riddler! Batman arrives to stop the Riddler and his evil plans The Riddler locked 3 floors with a riddle, solve the riddle if answered incorrectly 3 times, Bomb goes of!!! Help Batman solve the riddles to stop the Riddler and save Gotham City!
Play
Level 1 - Riddle
I'm tall when I'm young, and short when I'm old. What am I?
Crack IT
Exit

Level Two

```
62    public Map<Integer, String> levelTwo(String riddleAnswer)
63    {
64        Map<Integer, String> RiddleData = new HashMap<Integer, String>();
65
66            if(riddleAnswer.equalsIgnoreCase(answer2))
67            {
68                RiddleData.put(2, "Correct!! one step closer to stopping the Riddler");
69
70            } else
71            {
72                RiddleData.put(-1, "BOOM!!! BOOM!!! You Lose");
73            }
74
75        return RiddleData;
76    }
77
```

Level Two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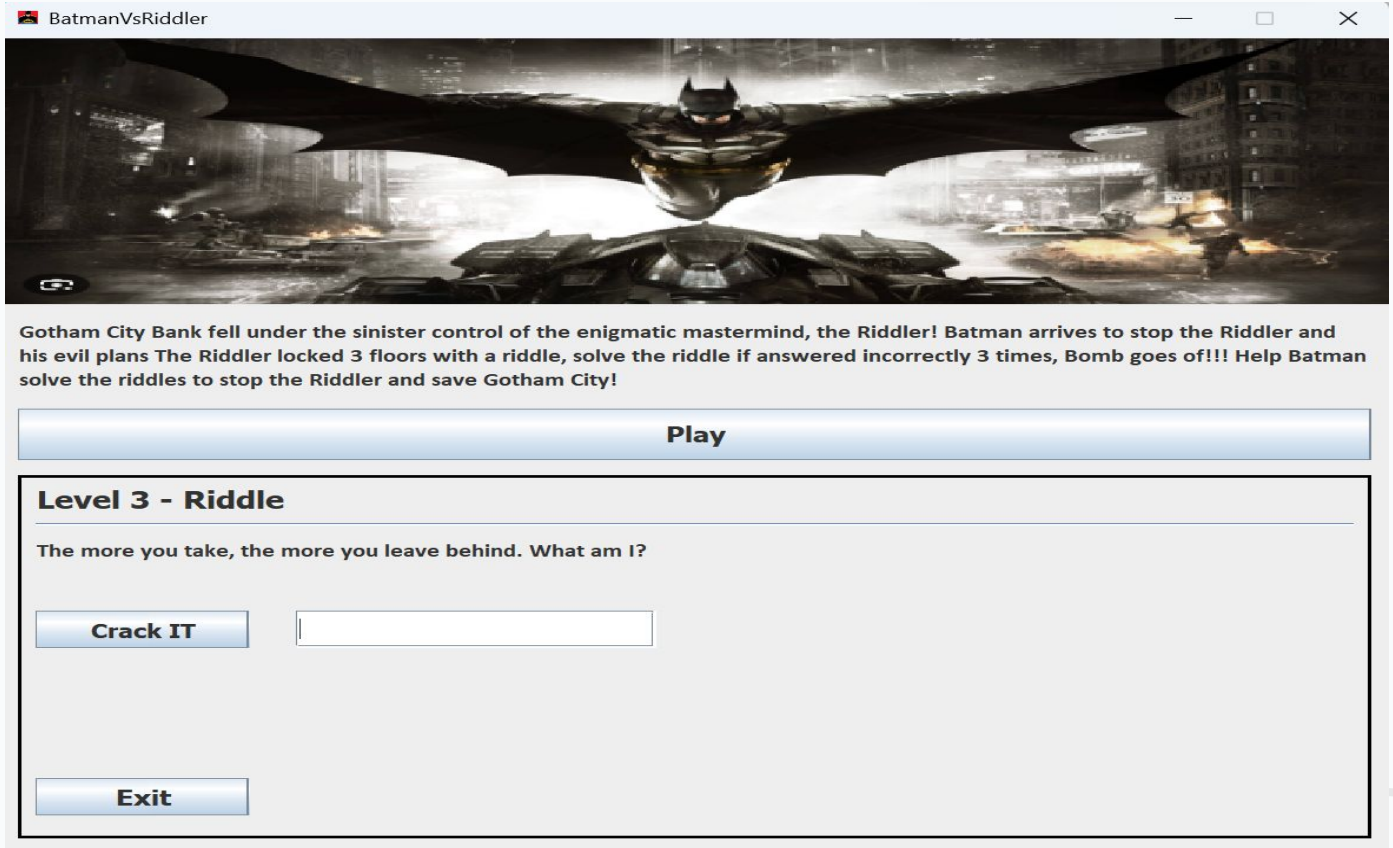
Play
Level 2 - Riddle
I speak without a mouth and hear without ears. I have no body, but I come alive with the wind. What am I?
Crack IT
Exit

Level Three

```
78    public Map<Integer, String> levelThree(String riddleAnswer)
79    {
80        Map<Integer, String> RiddleData = new HashMap<Integer, String>();
81
82            if(riddleAnswer.equalsIgnoreCase(answer3))
83            {
84                RiddleData.put(3, "The more you take, the more you leave behind. What am I?");
85
86            } else
87            {
88                RiddleData.put(-1, "BOOM!!! BOOM!!! You Lose");
89            }
90
91        return RiddleData;
92    }
93
94 }
```

Level Three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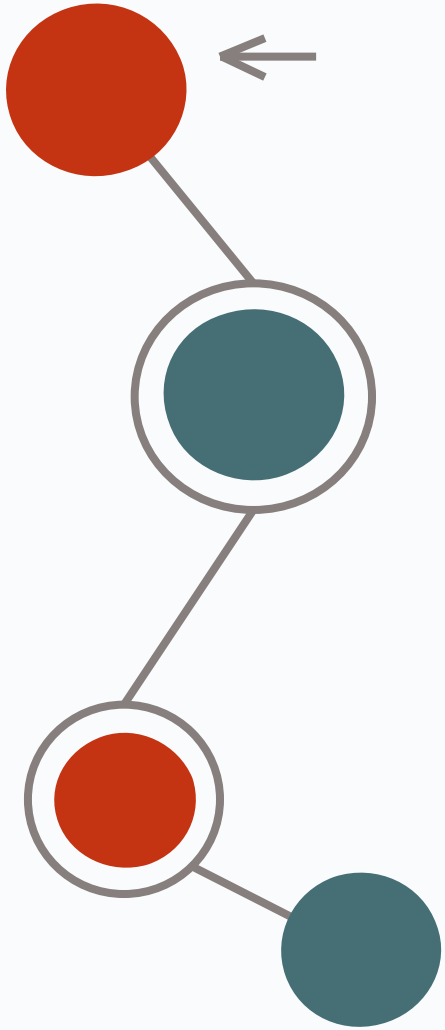
Play
Level 3 - Riddle
The more you take, the more you leave behind. What am I?
Crack IT
Exit

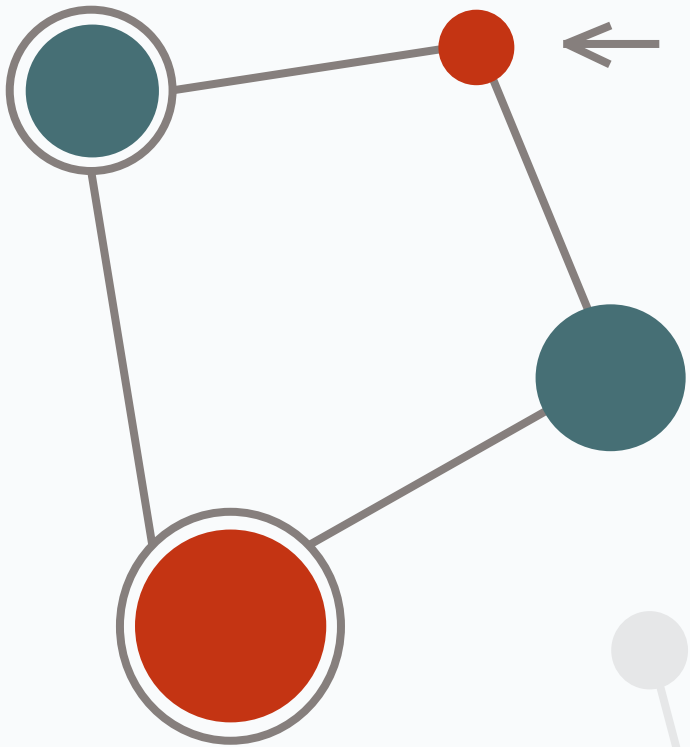


04

Conclusion

Conclusion

- Batman vs Riddler is not only an engaging and interactive game run on Java but it also upholds the theory of finite state machines.
- **When we learned**
  1. The importance of object-oriented programming
  2. How the levels in the game relate and exemplify a finite state machine
- **Challenges**
  1. Difficulty writing UI part
  2. Writing the game logic
  3. Designing graphics



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Akhtar, M. (n.d.). *Finite State Machines*. 03.FSM_Intro.pdf. https://nyit.instructure.com/courses/23661/pages/m4-slides?module_item_id=815965