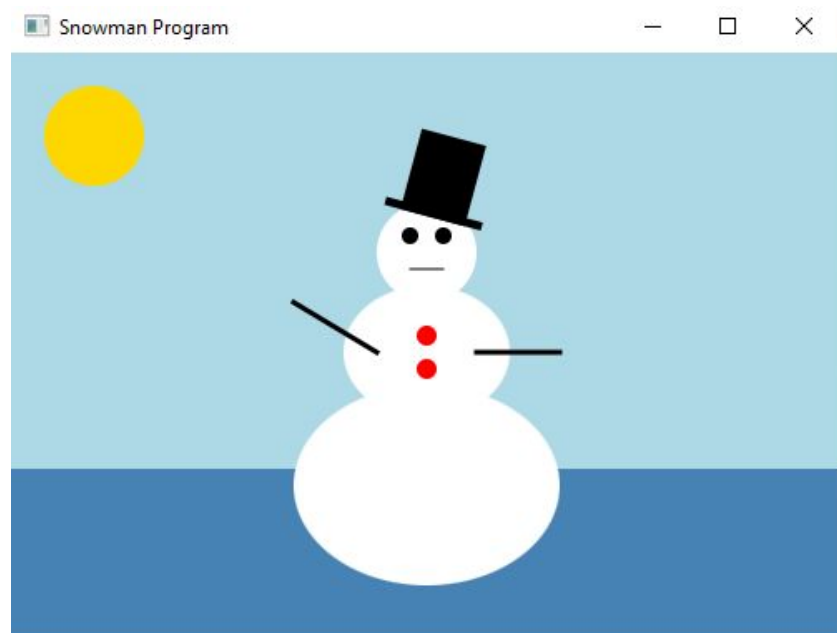


Computer Science: Graphical User Interfaces! Do you want to build a Snowman? (Activity #1)



Introduction: Computer Science is the branch of engineering science that studies the computation of computer technology, hardware, and software. Computer scientists are truly modern-day wizards. The sky's the limit as to what can be created with the tap of your fingertips and knowledge of how to communicate your vision to the computer. In a sense, a computer is similar to a baby. As Computer Scientists, we are parents to this baby and much like how parents guide babies in order for them to properly embark this treacherous world, we as Computer Scientists must teach a computer how to process certain commands in order for it to create wonderful things. The focus of this project is to learn the importance of graphical user interfaces. Graphical user interfaces focuses on event-driven programming and can be executed at any given time in response to different events. Examples of graphical user interfaces include drop-down menus, clicking a button, or in our case, drawing a Snowman.

What problem are we solving? We encounter Graphical User Interfaces in our daily lives on the internet. Whether it be clicking a button to exit from a webpage, scrolling through a drop down menu, or even displaying graphics, GUIs play a pivotal role in enhancing the design of the internet as we know it. Ever wonder how Facebook designs such a skillful timeline layout? All of that was done by Computer Scientists with the use of GUI. As a result, GUI has truly shaped the aesthetic appearance of the tech world as we know it.

Instructions for the Activity (for the demonstrators to perform)

1. The following materials are necessary:
 - a. Several laptops (at least three so that there is one for easy, medium, hard)
 - b. A wheel of fortune

- i. You can either choose to create a DIY wheel of fortune or you can use this online one: <http://www.superteachertools.us/spinner/>
 - ii. Remember to label the wheel of fortune in correspondence to the section of the snowman
- c. Install NetBeans on the laptops
- d. To start up the code:
 - i. Click on Netbeans
 - ii. In the IDE, click the New Project icon
 - iii. Choose the JavaFX category and select JavaFX Application under Projects.
 - iv. Click Next. After doing so, you will see the Name and Location panel. The IDE looks for JavaFX and attempts to generate a JavaFX enabled Java platform.
 - v. After creating the JavaFX project, precede to copy and paste the code.
 - vi. To run the program, choose Run and Run Project.
- 2. Allow the children to spin the wheel of fortune. Categories on the wheel of fortune include hat, arms, buttons, body, eyes/ mouth, head, etc.
- 3. After they have chosen, give them the code snippets corresponding to the section that the wheel has landed on.
- 4. Comment out the code snippet that the child is responsible for typing in.
- 5. Run the program to show them what it looks like before.
- 6. Allow the child to type in the code snippet.
- 7. Run the program again to show them what it looks like after.

Note for Demonstrators

Please remember to comment out the code snippet before the child is responsible for typing in their section of code. Also, you will need to print several copies of this program and cut out specific code segments in correlation to the comments which detail where each piece of the snowman is created. Remember to hand each student a segment in correlation to the section of the wheel their spin lands on.

Citations

Lewis, John, and William Loftus. *Java Software Solutions*. 9th ed., Pearson Education (US), 2011.

crashcourse. "Graphical User Interfaces: Crash Course Computer Science #26." *YouTube*, YouTube, 30 Aug. 2017, www.youtube.com/watch?v=XIGSJshYb90.

Snowman Program Code

```
/* Program: Snowman Program (Snowman.java)
   Modified By: Sydney Pun
   Date: 10/08/17
   Description: This Snowman Program designed for MEC Computer Science Fair.
```

```

   Note: This code was referenced from Lewis/Loftus's Java Software
         Solutions Book. Example titled Snowman.java. Please do not sue me for
   copyright infringement.
```

```
*/
```

```
import javafx.application.Application;
import javafx.stage.Stage;
import javafx.scene.Group;
import javafx.scene.Scene;
import javafx.scene.paint.Color;
import javafx.scene.shape.*;

public class Snowman extends Application
{
    public void start(Stage primaryStage)
    {
        //base of snowman is created
        Ellipse base = new Ellipse(80, 210, 80, 60);
        base.setFill(Color.WHITE);

        //mid-section of snowman is created
        Ellipse middle = new Ellipse(80, 130, 50, 40);
        middle.setFill(Color.WHITE);

        //head of snowman is created
        Circle head = new Circle(80, 70, 30);
        head.setFill(Color.WHITE);

        //the eyes and mouth are created here
        Circle rightEye = new Circle(70, 60, 5);
        Circle leftEye = new Circle(90, 60, 5);
        Line mouth = new Line(70, 80, 90, 80);

        //buttons are added here
        Circle topButton = new Circle(80, 120, 6);
        topButton.setFill(Color.RED);
        Circle bottomButton = new Circle(80, 140, 6);
        bottomButton.setFill(Color.RED);

        //arms are created here
```

```

Line leftArm = new Line(110, 130, 160, 130);
leftArm.setStrokeWidth(3);
Line rightArm = new Line(50, 130, 0, 100);
rightArm.setStrokeWidth(3);

//snowman's accessories are created here
Rectangle stovePipe = new Rectangle(60, 0, 40, 50);
Rectangle brim = new Rectangle(50, 45, 60, 5);

//hat is created here
Group hat = new Group(stovePipe, brim);
hat.setTranslateX(10);
hat.setRotate(15);

//Groups all variables created so that it will be displayed
Group snowman = new Group(base, middle, head, leftEye, rightEye, mouth,
topButton,
bottomButton, leftArm, rightArm, hat);
snowman.setTranslateX(170);
snowman.setTranslateY(50);

//sun is created here
Circle sun = new Circle(50, 50, 30);
sun.setFill(Color.GOLD);

//ground is created here
Rectangle ground = new Rectangle(0, 250, 500, 100);
ground.setFill(Color.STEELBLUE);

//displays the snowman and the background together
Group root = new Group(ground, sun, snowman);
Scene scene = new Scene(root, 500, 350, Color.LIGHTBLUE);

//output is titled and declared here
primaryStage.setTitle("Snowman Program");
primaryStage.setScene(scene);
primaryStage.show();

}

//launches program
public static void main(String[] args)
{
    launch(args);
}

```

