Topic	ELEMENTS OF GAME DESIGN	
Class Description	**The student will learn to deconstruct games into important game design elements.**	
Class	**C43**	
Class time	**40 mins**	
Goal	• Learn to deconstruct games. • Identify the important game design elements.	

Resources Required	• Teacher Resources
	  ○ VS Code Editor
	  ○ Laptop with internet connectivity
	  ○ Earphones with mic
	  ○ Notebook and pen
	• Student Resources
	  ○ VS Code Editor
	  ○ Laptop with internet connectivity
	  ○ Earphones with mic
	  ○ Notebook and pen	

Class structure	**WARM-UP** **Teacher-Led Activity** **Student-Led Activity** **WRAP-UP**	**5 Mins** **10 Mins** **20 Mins** **5 Mins**

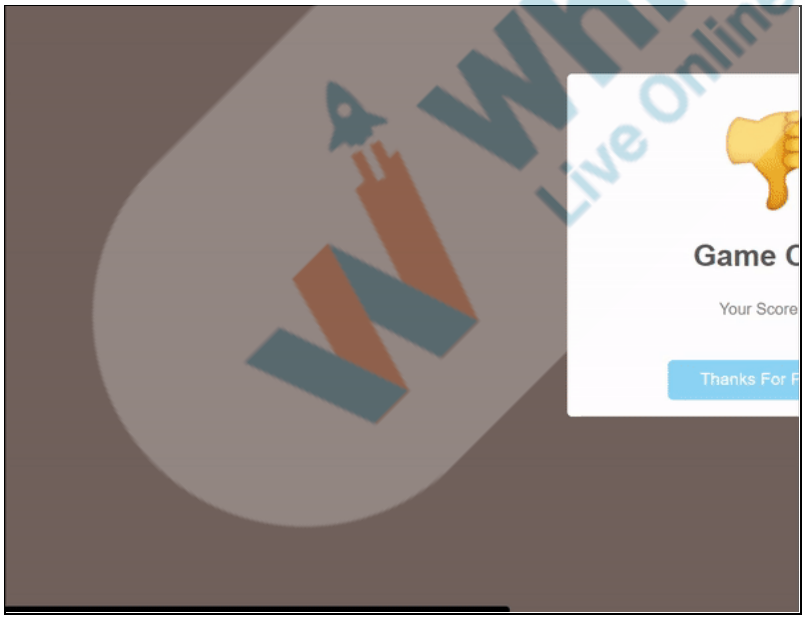
WARM-UP SESSION - 5 mins

Teacher starts slideshow  **from slides 1 to 8**

Refer to speaker notes and follow the instructions on each slide.

Activity details	Solution/Guidelines
Hi, so good to see you again! How have you been? Are you excited to learn something new?	**ESR**: Thanks, yes, I am excited about it.

Run the presentation from slide 1 to slide 3. **The following are the WARM-UP session deliverables:** ● Connecting students to the previous class. ● Discuss the quizzes	Click on the slide show tab and present the slides.
QnA Session	
Question	**Answer**

What will the following code block do?
`function shootBullet(){`
`  bullet= createSprite(150, width/2, 50,20)`
`  bullet.y= gun.y-20`
`  bullet.addImage(bulletImg)`
`  bullet.scale=0.12`
`  bullet.velocityX= 7`
`  bulletGroup.add(bullet)`
`}`
 
 	
A. It will create a bullet sprite, make it move along with the gun in y-axis.
B. It will create a bullet sprite, make it move along with
	A

the gun in x-axis. C. It will create a bullet sprite, make it move along with the gun in y-axis and x-axis. D. It will create a bullet sprite, make it move along with the gun in only x-axis but not y-axis.	

What does the following code block do?
`function handleBubbleCollision(bubbleGroup){`
`  if (life > 0) {`
`  score=score+1;`
`  }`
 	
A. It increases the score only if life remaining is less than 0.
B. It increases the score only if life remaining is greater than 0.
C. It increases the score only if life remaining is equal to 0.
D. It increases the score only if life remaining is in negative values.
	B

Continue the WARM-UP session	
Activity details	**Solution/Guidelines**
Run the presentation from slide 4 to slide 8 to set the problem statement. **Following are the objectives of the WARM-UP session:** ● Discuss the Elements of Game Design.	Narrate the slides by using hand gestures and voice modulation methods to bring in more interest in students.
Teacher ends slideshow 	
TEACHER-LED ACTIVITY - 10 mins	
Teacher Initiates Screen Share	

CHALLENGE

- **Deconstruct a game to identify the game design elements which make games fun.**

Teacher starts slideshow  **from slides 9 to 12**

Refer to speaker notes and follow the instructions on each slide.

Teacher Action	Student Action
We have created so many games till now, a few during the class and a few as projects. Now it is time for you to create your own game using the concepts of JavaScript you have learned so far. Are you excited about it? Before we go ahead with it, let me introduce a very important concept of game elements. We will start decoding games to identify the important elements in them, let's start by playing a game that we created in the last few classes, our multiplayer car racing game. Can you share a GitHub link we created in the last class? *In case the link was not generated in the last class, the teacher can guide a student to upload the code from the previous class to GitHub. The code is also given as Student Activity 1, make sure to update database SDK code.*	**ESR**: Yes! *The student shares the link created in the previous class;* *OR* *Downloads the code from Student Activity 1 and replaces the SDK code. Updates on GitHub and generates a link.*
Let's play this game *The teacher and student play the game.*	
That is an awesome game we created, isn't it? Now, if we had to break down (deconstruct) the game into different components, what would they be?	**ESR**: Varied *The student describes the different components of*

	the game in his/her own words.
Every game that you might have played has some characters. Right? What are the characters used in our multiplayer car racing game? Correct!	**ESR:** Cars, power coins, obstacles, fuel.
Now, a character can either be a Playing Character (PC) controlled by the player or a Non-Playing Character (NPC) that's controlled by the computer. Which are the Playing and Non-playing characters in the car racing game? *Remember to appreciate the student for the correct answers. Appreciations go a long way to boost the student.*	**ESR:** PC ->Cars NPC -> Obstacle, Fuel, Coins.
In any game, the player has a clearly defined goal. What is the goal of the player in the car racing game?	**ESR:** The player has to control the cars to reach the finish line.
You might have observed, every game also has a certain set of rules. Can you think of a game you have been playing since childhood? Be it a mobile game or an offline game, each game has certain rules. Assume you are playing Shoots and Ladders with your friends without any rules, how do you think would that game turn out to be?	**ESR**: Varied **ESR**: Varied, Confusing

Without any rules, how will you explain how to play the game? Would it be fun to play? Considering that, what are the rules we have kept in the game here?	**ESR**: No **ESR:** ● Life reduces when cars collide with each other or the obstacles. ● Fuel reduces when cars are moving. ● Fuel increases when cars overlap fuel tanks. ● Score increases with collecting power coins. ● Game can be played only when 2 players join. ● Game is lost when the player runs out of fuel or lives.

Next, we move onto setting the difficulty of these rules. The rules of a game should be balanced. This means if the game is too difficult, people will not play it. If the game is too easy, people will not find it challenging enough to spend time on it. Game designers spend a lot of time trying to get the balance of the game right. What are the rules here in the game that bring balance in the game?	**ESR:** Fuel is reduced while moving the car, but it can be increased by getting a fuel tank.
A good game is also adaptive - normally their difficulty level keeps increasing as the player plays the game. How do you think is our car racing game adaptive? In many games, you will also see levels, which are designed to do the same thing.	**ESR:** By adding collisions between both cars and the obstacles.
A good gameplay has some elements of chance and some elements of skill involved. What do you think are the elements of chance in this game?	**ESR:** The appearance of fuel tanks, obstacles, and other player's cars are completely random. So whether the fuel increases or a collision occurs, these

And what are the elements of skill in this game?	involve the elements of chance. **ESR:** The skill of the player in quickly maneuvering their car away from the other player's car and obstacles and grab all the fuel tanks on the way.
Another very good characteristic of games is that they give immediate feedback to the player on how they are doing. How is this being done in our game?	**ESR:** • The player gets a score depending on the power coin they collect. • The player gets a rank on crossing the finish line. • The player loses life on collision. • The player loses life when they run out of fuel.
Amazing! Lastly, all games tell a story. Some games tell a story made by the game designers. Other games allow the player to infer a story through the gameplay. What do you think is the story in our game? Can you quickly think of a story that will explain the gameplay?	*The student tries to spin a story that will explain the gameplay.*

Great. So these are the different simple game elements in any game. Can you recall them again? *The teacher jots down the elements of the game on an open notepad/ word file.*	**ESR:** - Characters (PC and NPC) - Story - Goals - Rules - Balance - Adaptivity - Chance vs Skill - Feedback
These elements are what make good games. Let's quickly go back to our slides.	-
Teacher Stops Screen Share	
Teacher starts slideshow  **for slide 13 and slide 14.**	
Run the presentation for slide 13 and slide 14 to set the student activity context.	
Teacher ends slideshow 	
STUDENT-LED ACTIVITY - 20 mins	
• **Ask Student to press ESC key to come back to panel** • **Guide Student to start Screen Share** • **Teacher gets into Fullscreen**	
<u>ACTIVITY</u> • **Discuss about your own game using the game design elements.**	
Teacher Action	**Student Action**

We just decoded the game elements to make any game fun. Can you pick any other game that you often play and try to identify the game elements from them?	*The student chooses any other game and tries to identify the following elements in their game-* *- Characters (PC and NPC)* *- Story* *- Goals* *- Rules* *- Balance* *- Adaptivity* *- Chance vs Skill* *- Feedback* *The student elaborates on each aspect of the game design element and how it is used in the game.*
Awesome! You can also choose any boring activity and add some game design elements to it to make it fun, interesting, and engaging. Don't believe it? Let's try one. Choose any boring activity which you hate.	*The student chooses an activity which they dislike. Example - Learning history/ Math.*

Now let's add the game design elements to this activity to make it fun: - Choose the characters in this activity. - Spin an interesting story behind the activity. - Identify goals and rules for the activity. - Employ balance in the game and ways to get quick feedback.	*The student adds game design elements to the chosen activity.*
How does this activity sound now? Now, why don't you think of a game you would like to create? *The teacher and student can have a brainstorming session on different ideas that students come up with.* *Ask the student questions on different elements of the game suggested by the student. The student can note down all discussions as a point in Notepad / Notebook.* *Discuss the concepts that can be used in order to create the game suggested by the student.* *If there is still lots of time, OR the student is unable to come with an idea OR if you feel a revision is needed then move to Additional Activity1 OR 2.*	**ESR:** Interesting **ESR**: Varied
Teacher Guides Student to Stop Screen Share	
WRAP-UP SESSION - 5 Mins	
Teacher starts slideshow : Slide 15-23	
Activity details	**Solution/Guidelines**
Run the presentation from slide 15 to slide 23. **Following are the WRAP-UP session deliverables:**	

• **Revise the concepts** • **WRAP-UP Quiz** • **Explain the facts and trivias** • **Project for the day** • **Next class challenge** • **Additional Activity**	Guide the student to develop the project and share it with us

Quiz time - Click on the in-class quiz

Question	Answer
Any good game should not be too difficult or too easy. This is called adding _____ to the game. A. Adaptivity B. Chance vs. skill C. Story D. Balance	**D**
Select the correct full-form of PC and NPC. A. Playing Character and Non-Playing Character. B. Playing Comic and Non-Playing Comic. C. Playing Console and Non-Playing Console. D. Playing Comrade and Non-Playing Comrade.	**A**
Why do we add adaptivity to a game? A. To make the game compatible with multiple devices. B. To increase the difficulty level in a game. C. To convert the game from a single player to a multiplayer game. D. To make the game easy to win.	**B**

End the quiz panel

FEEDBACK

- **Appreciate the student for their efforts in the class.**
- **Ask the student to make notes for the reflection journal along with the code they wrote in today's class.**

Teacher Action	Student Action

<table>
<tr>
<td>Awesome! You get hats off.

In the next class, we will be creating a story for the self-made game.</td>
<td>Make sure you have given at least 2 Hats Off during the class for:

 
 
  </td>
</tr>
<tr>
<td>*This Project will take only 30 mins to complete. Motivate students to try and finish it immediately after the class.

TREASURE HUNT

Goal of the Project:

In Class 43, you have learned about the Game Design Elements, making games fun and engaging for players. In this project, you will be implementing some new concepts to create a puzzle that unlocks the treasure when solved.

Story:

Ali is an adventurer and has reached a cave full of treasure. The cave guardian asks him 3 questions that he has to get correct to pass.

We know you are good at coding. Can you help Ali get past the guardian and enter the cave?

I am very excited to see your project solution and I know you will do really well.

Bye Bye!</td>
<td>Note: You can assign the project to the student in class itself by clicking on the Assign Project button which is available under the projects tab.</td>
</tr>
</table>

Teacher ends slideshow 
Teacher Clicks ✖ End Class

ADDITIONAL ACTIVITIES -1 (Optional)	
Teacher Action	**Student Action**
We will revisit the games we have created so far, and try to recall the concepts we learned through the games. *The teacher can visit all games or choose a game that you feel requires revision based on the student.*	*The student opens up the code for different games and tries to recall the different game concepts and JavaScript concepts covered in the class so far in different games:*
Do you want to reflect back and recall the games we made and the concepts we learned? *Note: Encourage the student to recall the concepts. Allow them to revisit the code for the previous games and recall the concepts.*	**ESR**: Varied

ADDITIONAL ACTIVITIES -2 (Optional)	
Teacher Action	**Student Action**
Let's review a few JavaScript concepts by writing commands on the JS console.	
Ask the student to open a console window in the browser.	*Student opens a JavaScript console by pressing Ctrl + Shift + J in windows & Right-click -> Inspect in Mac*
Do you remember how you can write JavaScript commands in the console?	**ESR**: Yes / No

As soon as you write a command here and press enter, you can see the output for your program here. JavaScript's developers use the console for quick testing of their instructions. We will be using the console to test and revisit the concepts in JavaScript. *Note: The teacher guides the student to revisit the concepts covered in the class using Teacher Activity 1.*	*The student follows teacher instructions to write JavaScript commands and revises the concepts.*

Note to teachers [Only Applicable for C43]:

Next class C44 is a CHECKPOINT REVISION CLASS meant for practising concepts learned so far. Teachers should guide students to complete pending/expired projects after finishing the Teacher Led Activity (10 minutes).
Please check on the dashboard if the student has pending projects less than 3, then you can continue to do the Student Led Activity(SELF DESIGN GAME).

Links:

Activity	Activity Name	Links
Student Activity 1	Multiplayer Car Racing Game	https://github.com/pro-whitehatjr/C42-SpeedRacer_Reference-Code
Teacher Activity 1	Code Review	https://github.com/whitehatjr/jsreview/blob/master/README.md
Teacher Reference visual aid link	Visual aid link	https://curriculum.whitehatjr.com/Visual+Project+Asset/PRO_VD/BJFC-

		PRO-V3-C43-withcues.html
Teacher Reference In-class quiz	In-class quiz	https://s3-whjr-curriculum-uploads.whjr.online/1a1009b2-fa89-4e83-9b28-ae2e58c8bf41.pdf
Project Solution	Treasure Hunt	https://github.com/pro-whitehatjr/PRO-C43-V3-Solution