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Arrow Arcade

Version 1

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User's Guide
to JAVA game

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Introduction

🏹 Welcome to Arrow Arcade - Where Precision Meets Excitement! 🍏

Embark on a thrilling journey into the heart of precision and adventure with our latest creation: the Arrow Apple simulator! Picture this: an arrow, and a tantalizingly elusive apple, waiting to be struck with unparalleled accuracy.

In this immersive simulation, you are the archer, controlling the path of the arrow and on a quest for glory. Your mission? To hit the horizontally launched apple as it makes its daring descent from a cliff 20 meters high. Feel the rush as you as you get ready to unleash your arrow at the perfect angle.

But here's the twist - you've got just 5 trials to prove your mettle. Can you master the art of launching arrows and claim victory in the face of this gravity-defying challenge?

Set the launch angle, click "Launch," and watch the magic unfold! The Arrow Apple simulator is not just a game; it's a physics-based spectacle, where your strategic prowess intuition determine whether you emerge triumphant or witness the gracefully simulated trajectories of arrow and apple.

Get ready to experience the beauty of motion equations brought to life through JavaFX's animation. The beautiful visuals, coupled with interactive controls, create an atmosphere that is as entertaining as it is educational.

Are you up for the challenge? Can you find the sweet spot, the golden angle that transforms you from an archer into a marksman? The countdown begins, the arrow is in your hands, and the apple awaits its destiny.

Arrow Arcade beckons. The adventure begins. May your aim be true, and the arrows fly straight! 🎯🍎

System Requirements

Before diving into the captivating world of Arrow-Apple simulation with our JavaFX simulation game, ensure that your system meets the following requirements, especially because you will need to run the game using IntelliJ IDEA or Eclipse Java IDE.

For IntelliJ IDEA:

Minimum Requirements:

RAM: 2 GB of free RAM
CPU: Any modern CPU
Disk Space: 3.5 GB
Monitor Resolution: 1024×768
Operating System:
Microsoft Windows 10 (version 1809 or later)
Windows Server 2019 or later
macOS 11.0 or later
Any Linux distribution that supports Gnome, KDE, or Unity DE (excluding distributions without GLIBC 2.27 or later)

Recommended Requirements:

RAM: 8 GB of total system RAM
CPU: Multi-core CPU. IntelliJ IDEA leverages multithreading for enhanced performance, making it faster with more CPU cores.
Disk Space: SSD drive with at least 5 GB of free space
Monitor Resolution: 1920×1080
Operating System: Latest 64-bit version of Windows, macOS, or Linux (e.g., Debian, Ubuntu, or RHEL)
Note: Pre-release versions of operating systems are not supported.

For Eclipse Java IDE:

Minimum and Recommended Requirements:

RAM: Eclipse typically runs well with 2 GB of RAM, but more is recommended for larger projects.
CPU: Eclipse is not particularly CPU-intensive; therefore, any modern CPU should suffice.
Disk Space: Eclipse itself requires around 300 MB, but additional space is necessary for workspace and projects.
Monitor Resolution: Eclipse is flexible and can adapt to various resolutions.
Operating System: Eclipse is compatible with various operating systems, including Windows, macOS, and Linux.

Ensure that your development environment is optimized for the best simulation experience. Get ready to take aim.

Installation

Installing the JavaFX-based Arrow Arcade game involves a few steps. Follow these instructions to set up the game on your system, including the necessary JavaFX dependencies.

For IntelliJ IDEA:

Download the Source Code:

Obtain the Arrow Arcade game source code from the provided repository or source.
Open IntelliJ IDEA:

Launch IntelliJ IDEA on your system.
Import Project:

In IntelliJ IDEA, go to File -> New -> Project from Existing Sources.
Navigate to the downloaded Arrow Arcade game source code and select the project.
Configure JavaFX Dependencies:

IntelliJ IDEA may not automatically configure JavaFX dependencies. To set up JavaFX:
Go to File -> Project Structure.
Under "Project," ensure that the Project SDK is set to a compatible Java version.
Under "Libraries," add the JavaFX SDK to the project.
Configure the JavaFX Run Configuration by specifying the main class.
Build and Run:

Click on the "Build" option to compile the project.
Run the game using the configured JavaFX Run Configuration.
Enjoy the Game:

The JavaFX-based Arrow Arcade game should now be up and running. Enjoy playing!

For Eclipse Java IDE:

Download the Source Code:

Acquire the Arrow Arcade game source code from the provided repository or source.
Open Eclipse:

Open Eclipse on your system.
Import Project:

Navigate to File -> Import -> General -> Existing Projects into Workspace.
Select the root directory containing the Arrow Arcade game source code.
Configure JavaFX Dependencies:

Eclipse may not automatically configure JavaFX dependencies. To set up JavaFX:

Right-click on the project -> Build Path -> Configure Build Path.
Add the JavaFX SDK to the project under the "Libraries" tab.
Set the JavaFX runtime in the Run Configuration.
Build and Run:

Click on the "Build" or "Run" option to compile and execute the game.
Enjoy the Game:

Your JavaFX-based Arrow Arcade game is ready to be played in Eclipse. Have fun hitting apples!

JavaFX Dependencies:

Ensure that your system has the JavaFX SDK installed and configured in your development environment. The game's documentation or the provided source code should specify the required JavaFX version.

Follow these installation steps carefully, and you'll be ready to immerse yourself in this Arrow Arcade simulation experience. If you encounter any issues, refer to the troubleshooting section or consult the documentation for your specific IDE. Happy aiming!

Salient Features

Explore the unique and engaging features that make our Arrow Arcade game a standout experience:

1. Engaging Objective:

Players aim to hit an apple launched horizontally from a height using an arrow shot from the ground, providing a clear and engaging goal.

2. Limited Trials:

The game challenges players with a set of 5 trials to hit the target, adding an element of strategy and excitement.

3. Arrow Launch Parameters:

Users can set the launch angle (θ) of the arrow between 0 and 90 degrees, allowing for strategic decision-making in each trial.

4. Realistic Physics Simulation:

The simulator employs equations of motion to calculate the trajectory of the arrow and apple, providing a realistic physics-based gaming experience.

5. Visual Feedback System:

The game offers visual feedback on the outcome of each trial, showcasing whether the arrow successfully hits the apple or providing the trajectory paths if it misses.

6. User-Friendly Controls:

Simple and intuitive controls allow users to set the launch angle and initiate the arrow launch with ease.

7. Reset Functionality:

A "Reset" button enables users to start a new set of trials, offering them the opportunity to refine their strategy and improve their performance.

8. Constant Apple Velocity:

The apple maintains a consistent velocity throughout the trials, allowing players to focus on mastering the arrow launch.

9. Difficulty Levels:

The mention of difficulty levels suggests potential variations in challenge, providing replay value and catering to players of different skill levels.

10. JavaFX and Path Transition Animation:

The game utilizes JavaFX for the user interface and incorporates Path Transition animation, enhancing the visual appeal and creating an immersive gaming environment.

11. Engaging Instructions:

The game provides clear and engaging instructions, guiding players on how to play, set parameters, and interpret the simulation outcomes.

12. Educational Element:

The simulation is not just a game but also a learning experience, allowing players to explore and understand the principles of projectile motion and trajectory.

Getting Started

1. Launch the Game:

Open your preferred Java IDE (IntelliJ IDEA or Eclipse). Load the Arrow Arcade game project. Build and run the project to launch the game.

2. Welcome Screen:

Upon launching the Arrow Apple simulator, you will be greeted by the exhilarating welcome screen. Immerse yourself in the excitement as the screen comes to life with an inviting design and a captivating flickering animation that spells out the message, "Welcome to Arrow Arcade!" This dynamic animation serves as a prelude to the thrilling adventure that awaits you.

Welcome Screen

Key Features:

- Inviting Design:

The welcome screen is crafted with an aesthetic and welcoming design, setting the tone for the engaging gameplay experience.

- Flickering Animation:

As a special touch, the screen features a flickering animation that introduces you to the Arrow Arcade world. The message "Welcome to Arrow Arcade" flickers dynamically, creating an exciting and visually appealing effect.

- Start Game Button:

Positioned prominently on the welcome screen is the "Start Game" button. Clicking this button will catapult you into the heart of the Arrow Apple adventure, where precision meets excitement. Clicking the Start button will take you to the instruction screen. Upon clicking the "Start Game" button, you will seamlessly transition to the Instruction Screen. Here, you will receive clear and engaging guidance on how to play the game, set launch parameters, and make the most of your Arrow Apple experience.

Let the flickering animation heighten your anticipation, and may your journey into Arrow Arcade be filled with precision, fun, and triumph! 🏹🍏

3. Instruction screen:

- Detailed Instructions:

The Instruction Screen provides step-by-step details on how to play the game. From setting launch angles to understanding simulation outcomes, you'll find all the information you need to become a skilled archer in Arrow Arcade.

- Preconditions:

Learn about the preconditions and rules that shape the gameplay. Understand the number of trials, the significance of launch angles, and the thrilling challenge of hitting the apple thrown from the cliff.

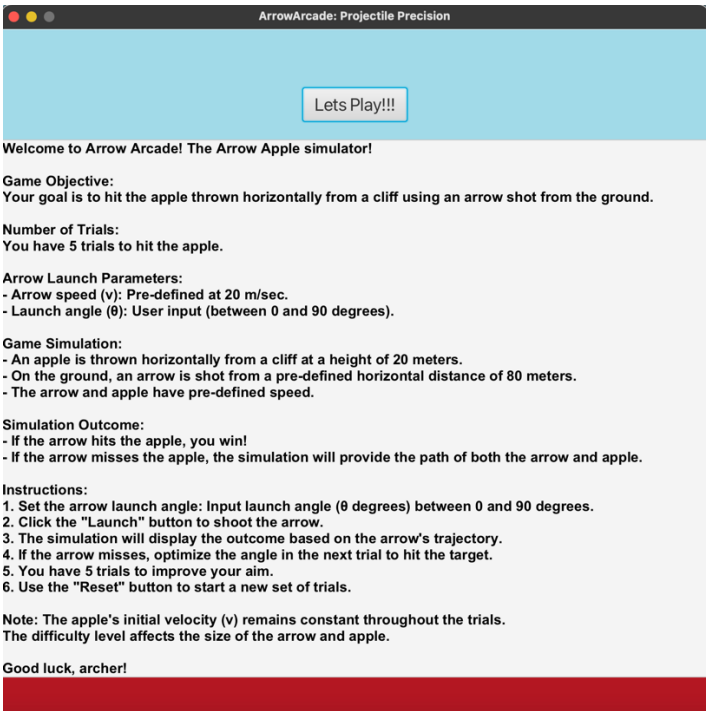
- Let's Play Button:

At the top center of the Instruction Screen, you'll find the enticing "Let's Play" button. Clicking this button opens the Difficulty Dialog Box, allowing you to choose the level of challenge for your Arrow Apple adventure.

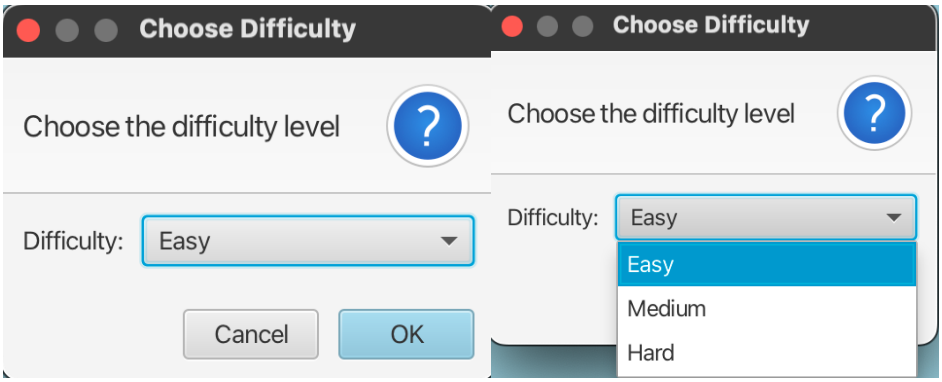
Clicking the "Let's Play" button opens the Difficulty Dialog Box. Here, you can choose the level of challenge for your Arrow Apple adventure. Select from various difficulty options, each affecting the size of the arrow and apple, and embark on a thrilling journey tailored to your skill level.

The Instruction Screen serves as your gateway to mastering the art of archery in Arrow Arcade. Read through the details, click "Let's Play," and may your arrows always find their mark! 🎯🍏

Instruction Screen:



Difficulty Dialog box:



4. Main Game Screen:

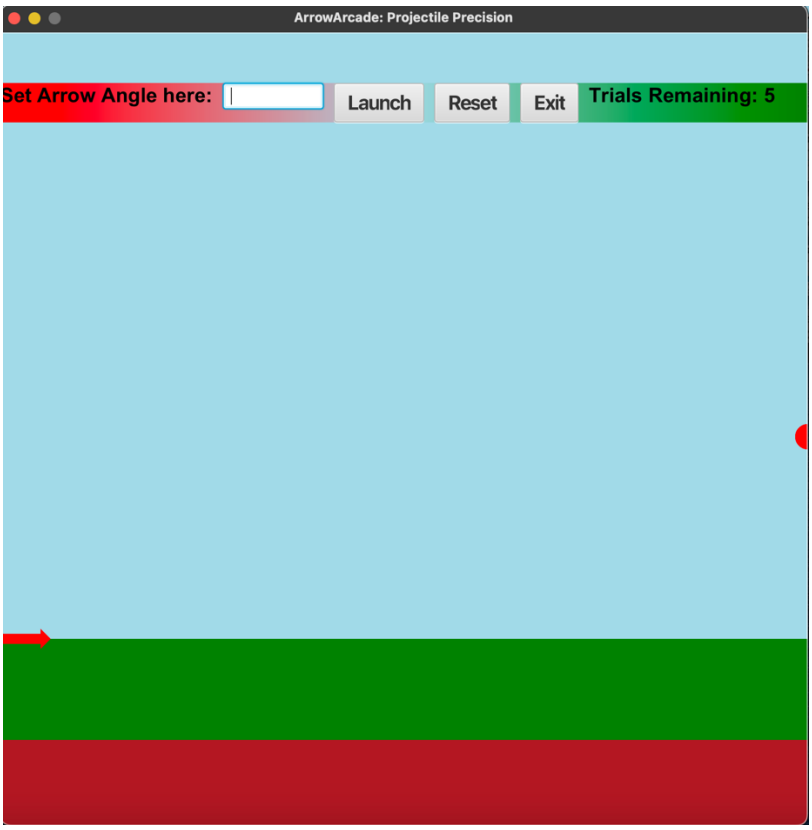
Welcome to the heart of the Arrow Apple adventure! The Main Game Screen is where the thrill of archery meets the beauty of projectile motion simulation. Immerse yourself in the picturesque visuals and strategic gameplay that define this exciting stage of the game.

Key Elements:

- **Visual Landscape:**

The ground level is adorned with a vibrant green shade, resembling a lush grassy field. Below a certain height, the color transitions to a brown shade, resembling soil.

Main game screen:



The background sky is painted in a serene blue, providing a picturesque setting for your archery endeavors.

- **Arrow Placement:**

A stylized arrow is positioned at ground level, ready for launch. The arrow appears as if embedded in the green grass.

- **Apple at Height:**

An apple is suspended at a pre-defined height, from where it is launched, challenging you to hit the target with precision.

- **Angle Input Box:**

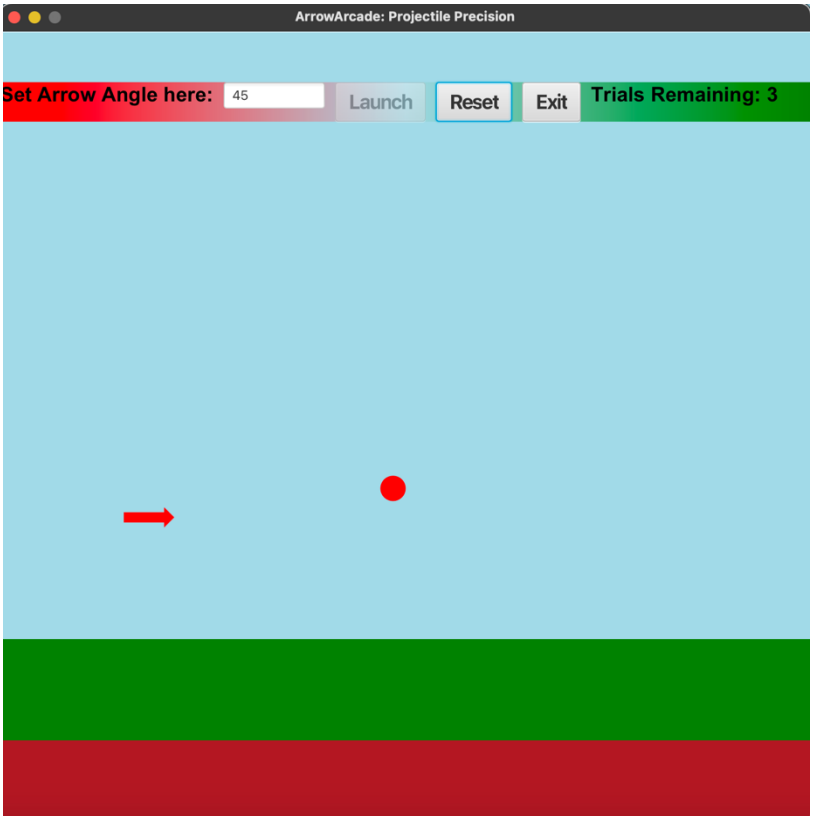
At the top of the screen, there's an angle input box with a label, "Set your arrow angle here." Next to it is a space where you can enter the launch angle for your arrow.

- **Launch Button:**

To the right of the angle input box is the "Launch" button. After entering the desired angle, clicking this button initiates the arrow launch. Once pressed, the launch button is disabled until the arrow completes its trajectory.

- **Simulation of Projectile Motion:**

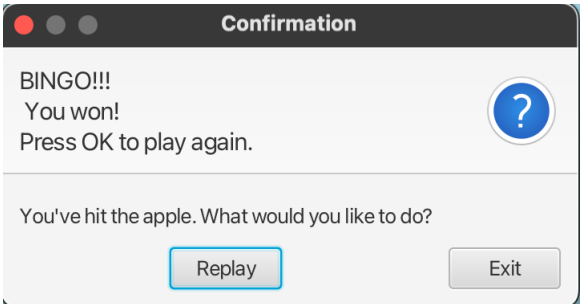
Upon pressing the launch button, both the arrow and the apple are launched, and the game simulates their projectile motion based on the entered angle and predefined parameters.



- **Outcome Display:**

If the arrow hits the apple, you win! A congratulatory message may appear, and you proceed to replay the game.

Congratulatory message:



If the arrow misses, you have four more trials. The trajectories of both the arrow and the apple are displayed in dotted green lines, offering insights to help optimize your angle for the next trial.

- **Reset Button:**

To the right of the launch button is the "Reset" button. Clicking this button resets the game and prompts the Difficulty Dialog Box, allowing you to choose a new difficulty level.

- **Exit Button:**

To the right of the reset button is the "Exit" button. Clicking this button allows you to exit the game.

- **Trials Remaining Label:**

Further to the right is the "Trials Remaining" label, indicating the number of trials remaining. Keep an eye on this label as you navigate through the challenges.

How to Navigate:

1. Set Your Angle:

Enter your desired arrow launch angle in the input box.

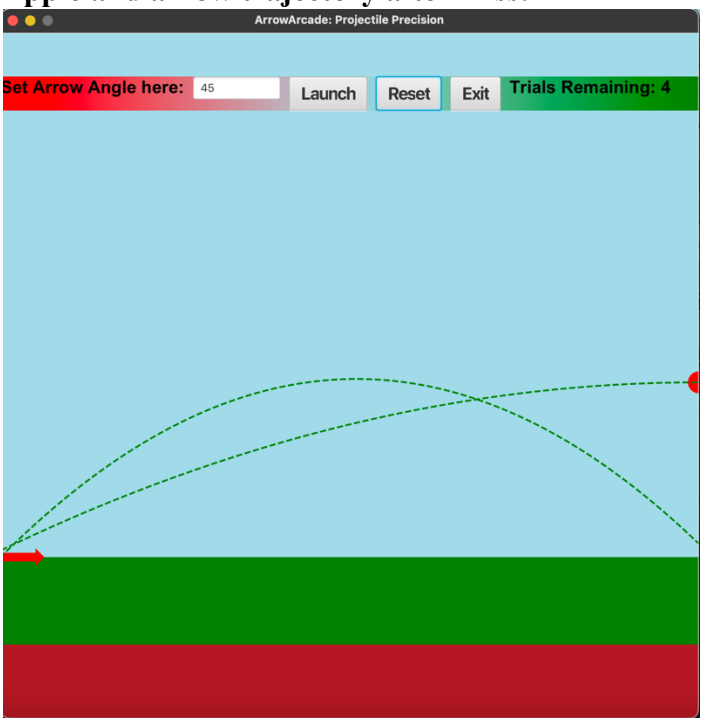
2. Launch Your Arrow:

Click the "Launch" button to initiate the arrow launch. The button will be disabled until the trajectory is complete.

3. Evaluate Trajectory:

After each unsuccessful trial, observe the dotted green lines representing the trajectories. Use this visual feedback to optimize your angle for the next attempt.

Apple and arrow trajectory after miss:



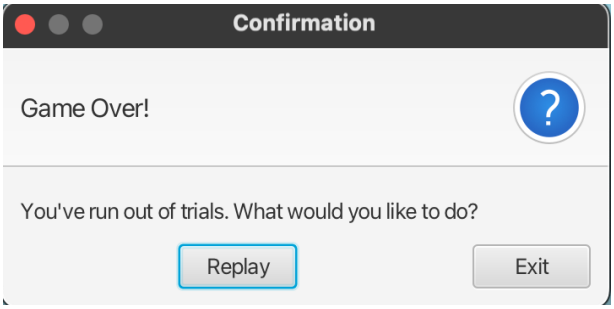
4. Reset or Exit:

If needed, use the "Reset" button to start anew or the "Exit" button to conclude your Arrow Apple adventure.

5. Trials Remaining:

Keep track of the remaining trials displayed on the label.

Game over message if you run out of trials!



The Main Game Screen combines aesthetics, physics simulation, and strategic gameplay to deliver an immersive archery experience. May your arrows find their mark, and may the challenge of hitting the apple ignite your determination! 🏹🍏

Contact Information

We value your experience with Arrow Arcade and are here to assist you. If you have any questions, feedback, or encounter any issues, feel free to reach out to our support team. We're dedicated to ensuring you have a seamless and enjoyable gaming experience.

Support Email:

For general inquiries and support, please contact us at:

vkhot@stevens.edu

We appreciate your support and look forward to hearing from you!