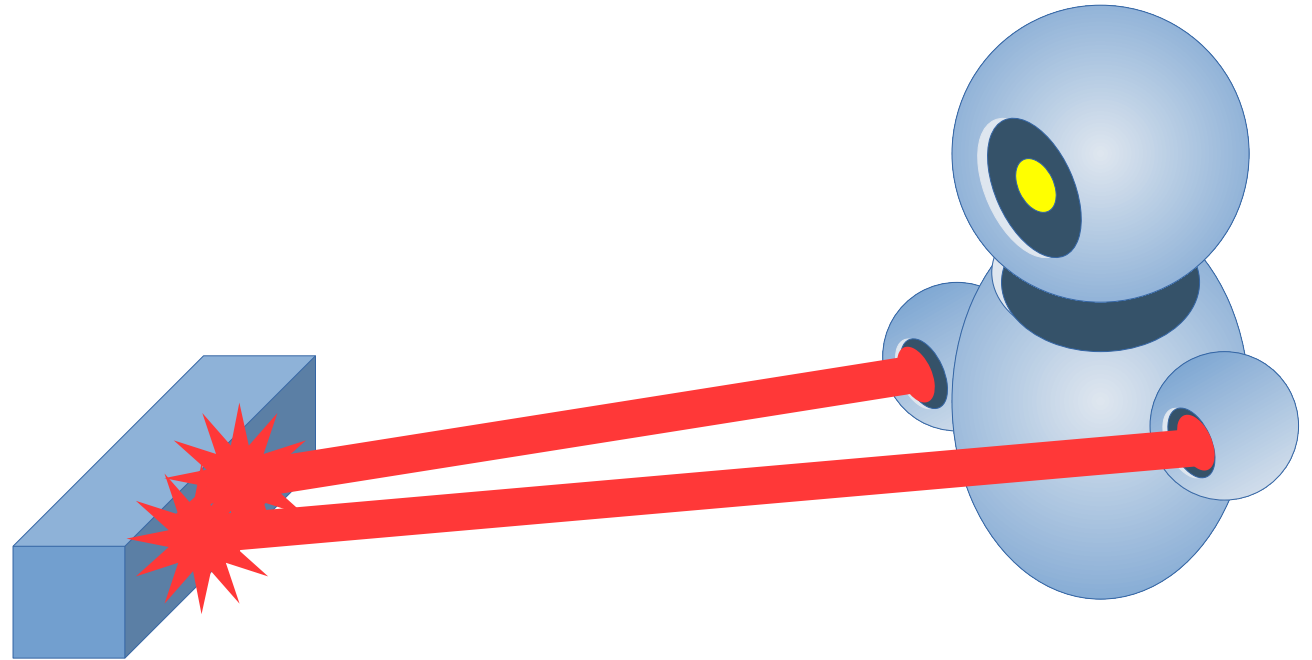
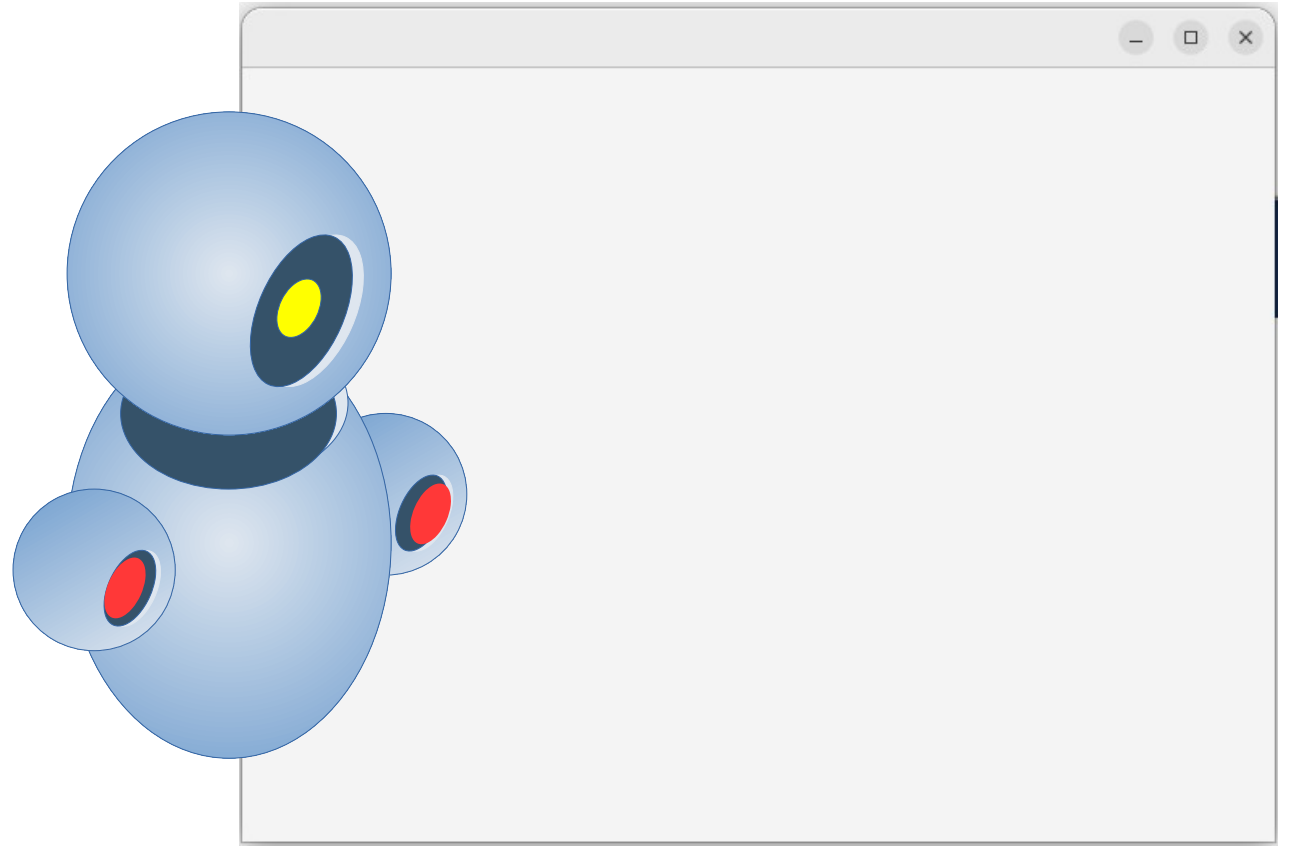


THE CHON GAME IN JAVA



MY FIRST JAVA FX APPLICATION

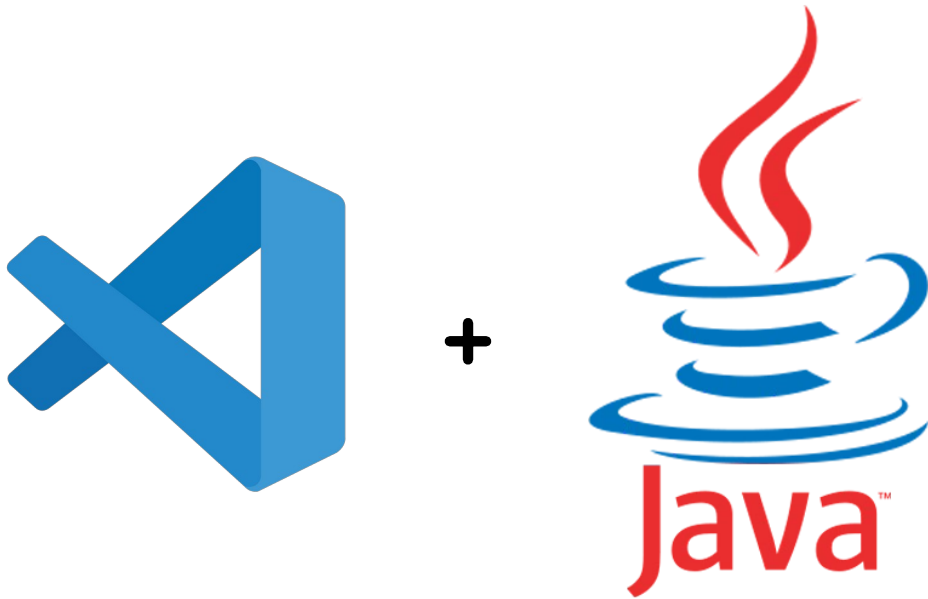


JavaFX is a comprehensive software platform for creating and programming client and cross-platform desktop applications.

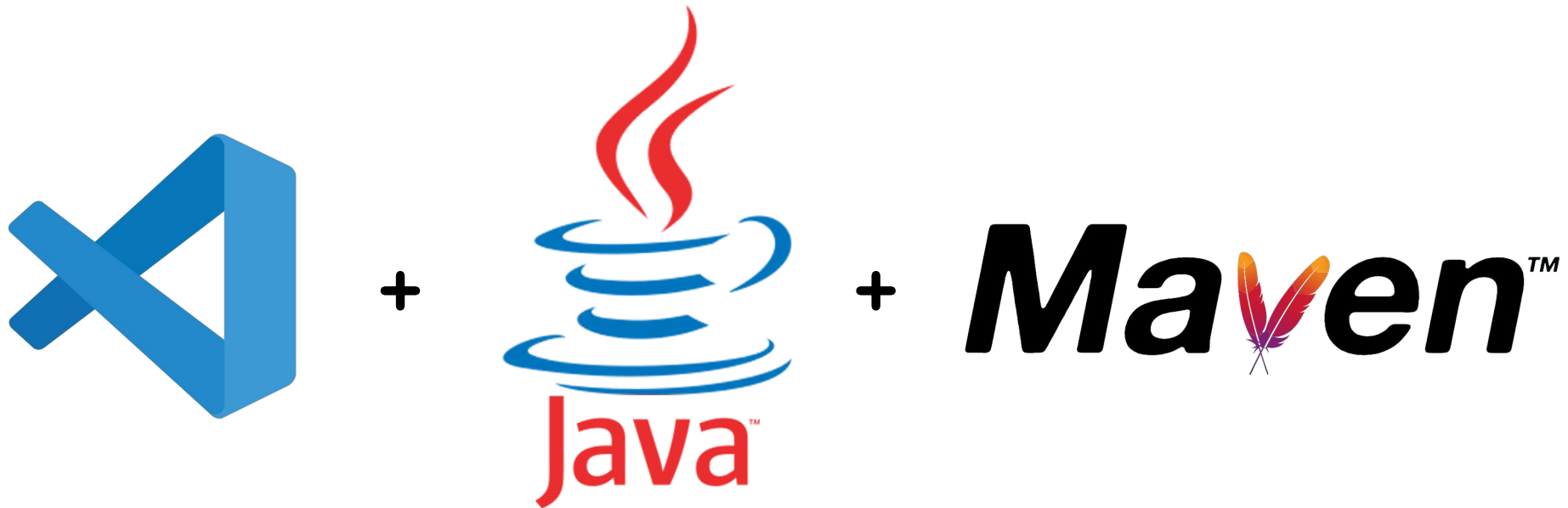
Project Technologies



Project Technologies



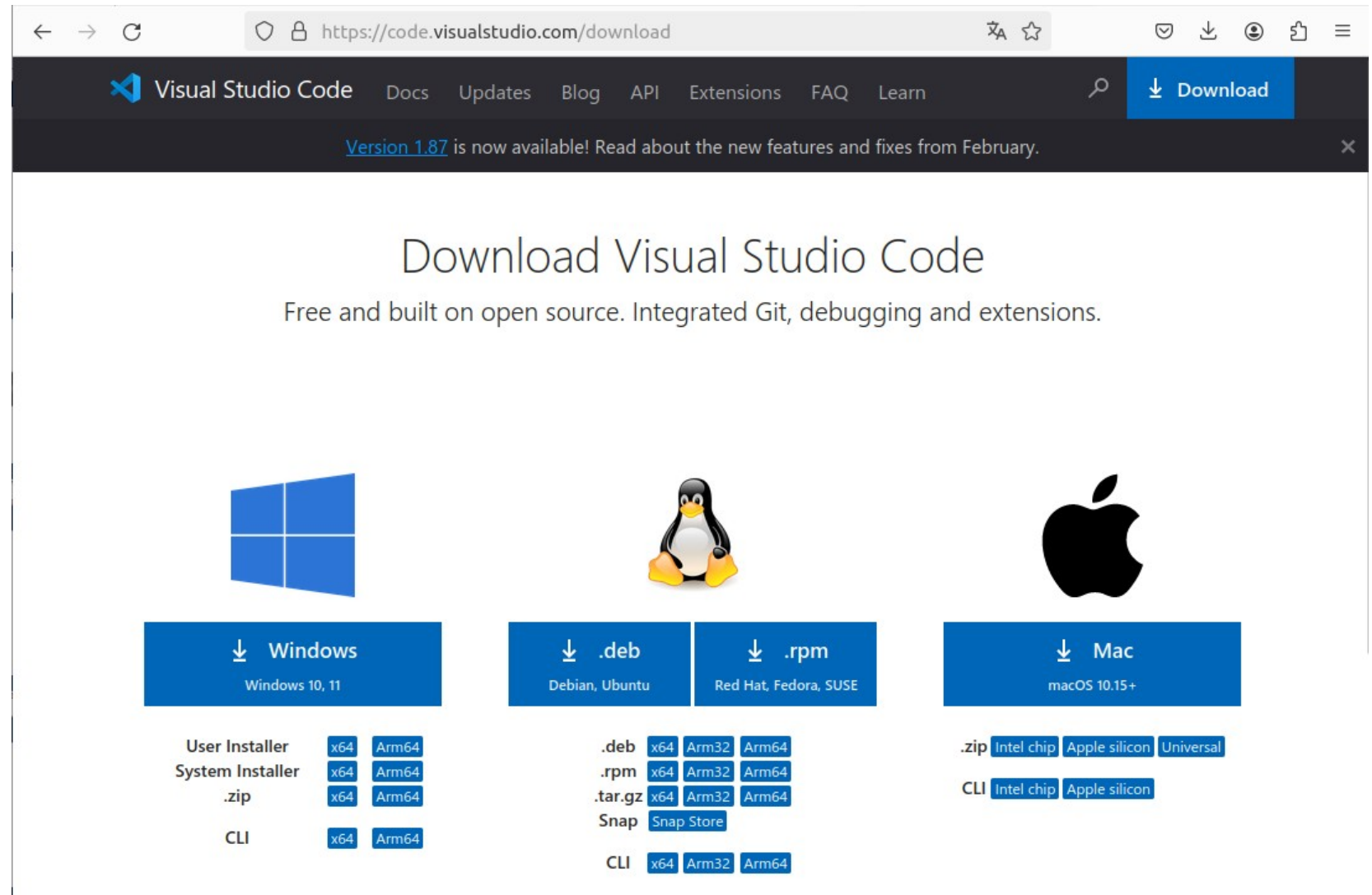
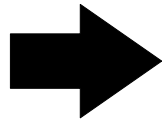
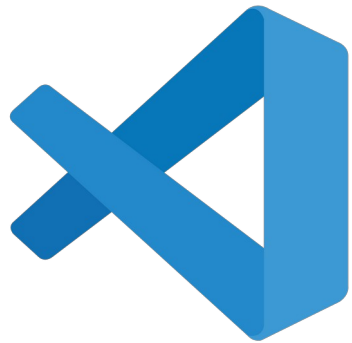
Project Technologies



Project Technologies



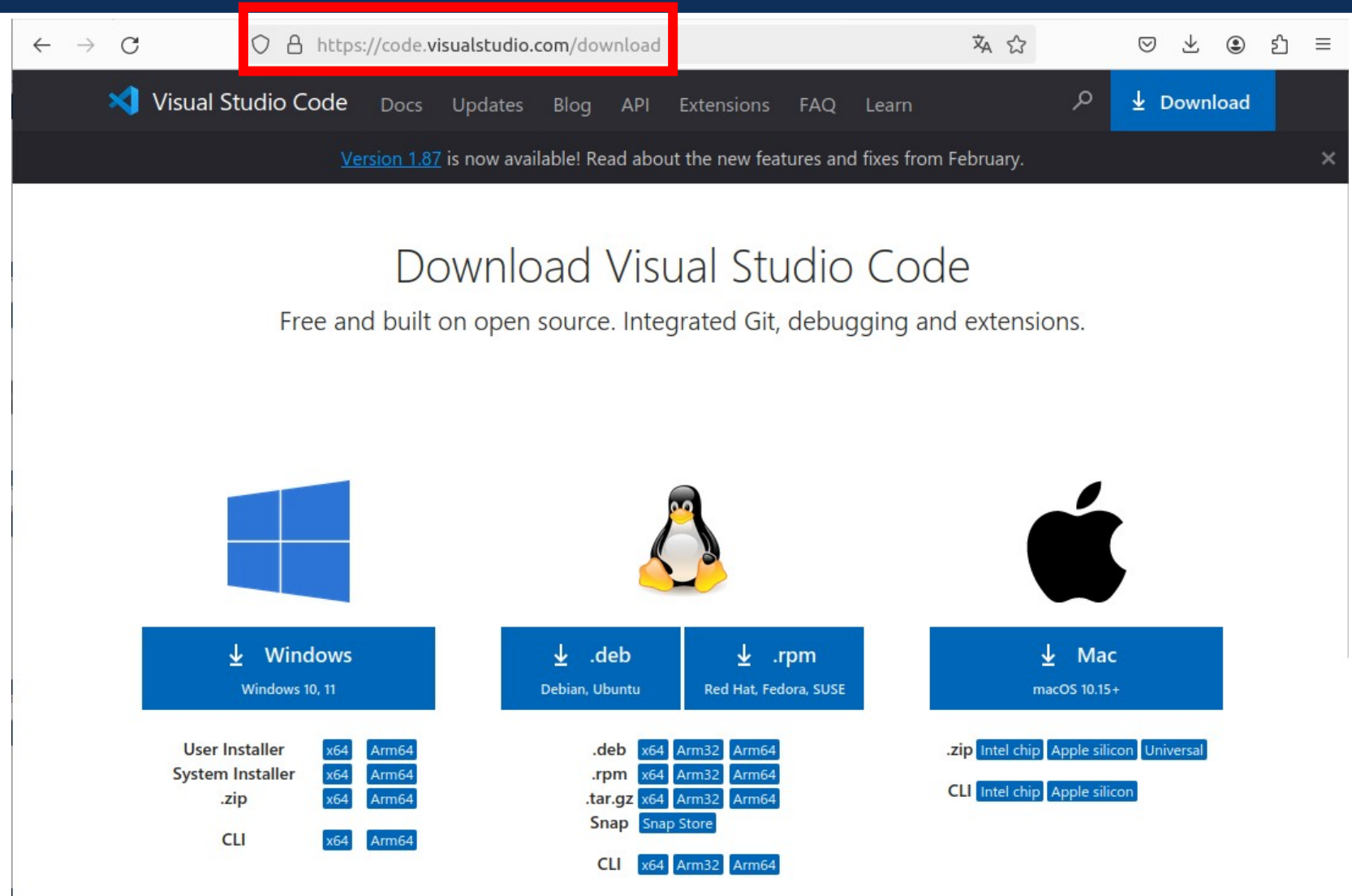
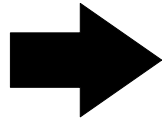
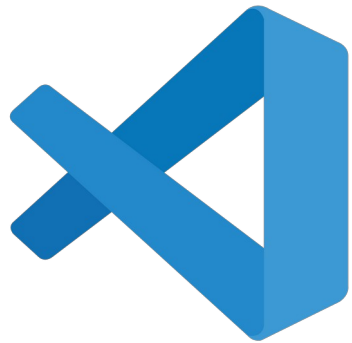




The screenshot shows the Visual Studio Code download page. The browser address bar displays `https://code.visualstudio.com/download`. The page header includes the Visual Studio Code logo and navigation links: Docs, Updates, Blog, API, Extensions, FAQ, and Learn. A prominent blue 'Download' button is located in the top right. A notification banner states: 'Version 1.87 is now available! Read about the new features and fixes from February.' The main heading is 'Download Visual Studio Code', followed by the tagline 'Free and built on open source. Integrated Git, debugging and extensions.'

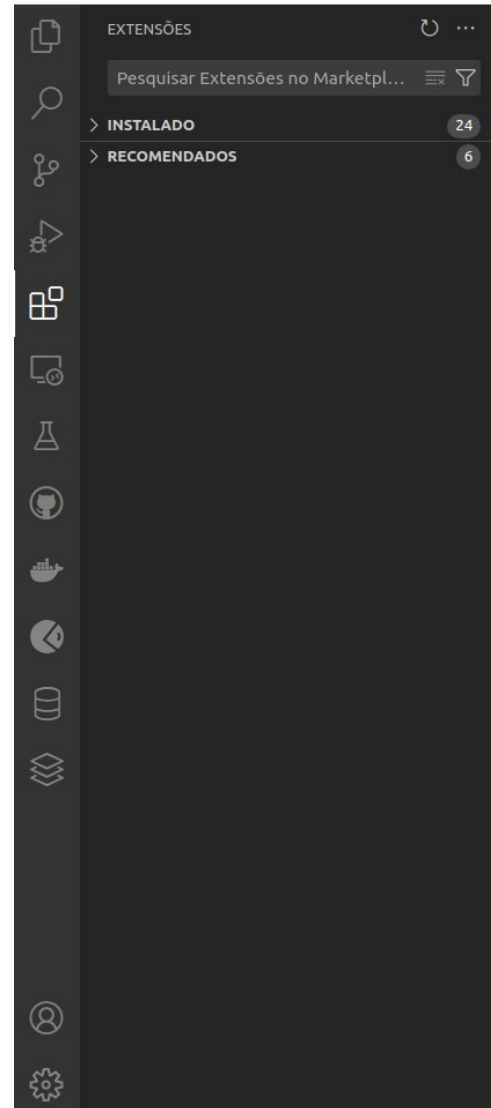
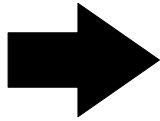
Below the heading, three operating system icons are displayed: Windows, Linux (Tux penguin), and macOS (Apple logo). Each icon is associated with a blue download button:

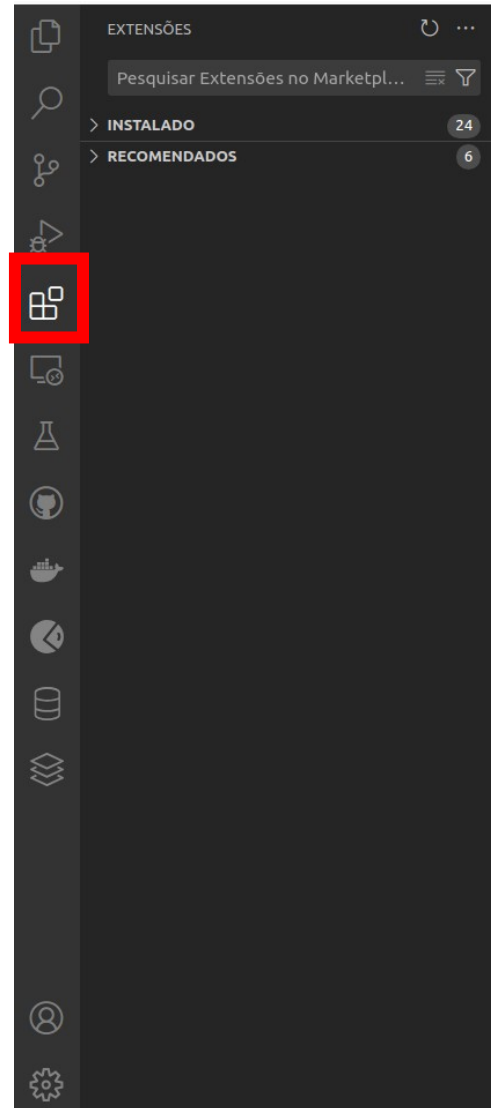
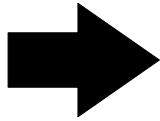
- Windows** (Windows 10, 11):
 - User Installer: x64, Arm64
 - System Installer: x64, Arm64
 - .zip: x64, Arm64
 - CLI: x64, Arm64
- Linux** (Debian, Ubuntu):
 - .deb: x64, Arm32, Arm64
 - .rpm: x64, Arm32, Arm64
 - .tar.gz: x64, Arm32, Arm64
 - Snap: Snap Store
 - CLI: x64, Arm32, Arm64
- Mac** (macOS 10.15+):
 - .zip: Intel chip, Apple silicon, Universal
 - CLI: Intel chip, Apple silicon

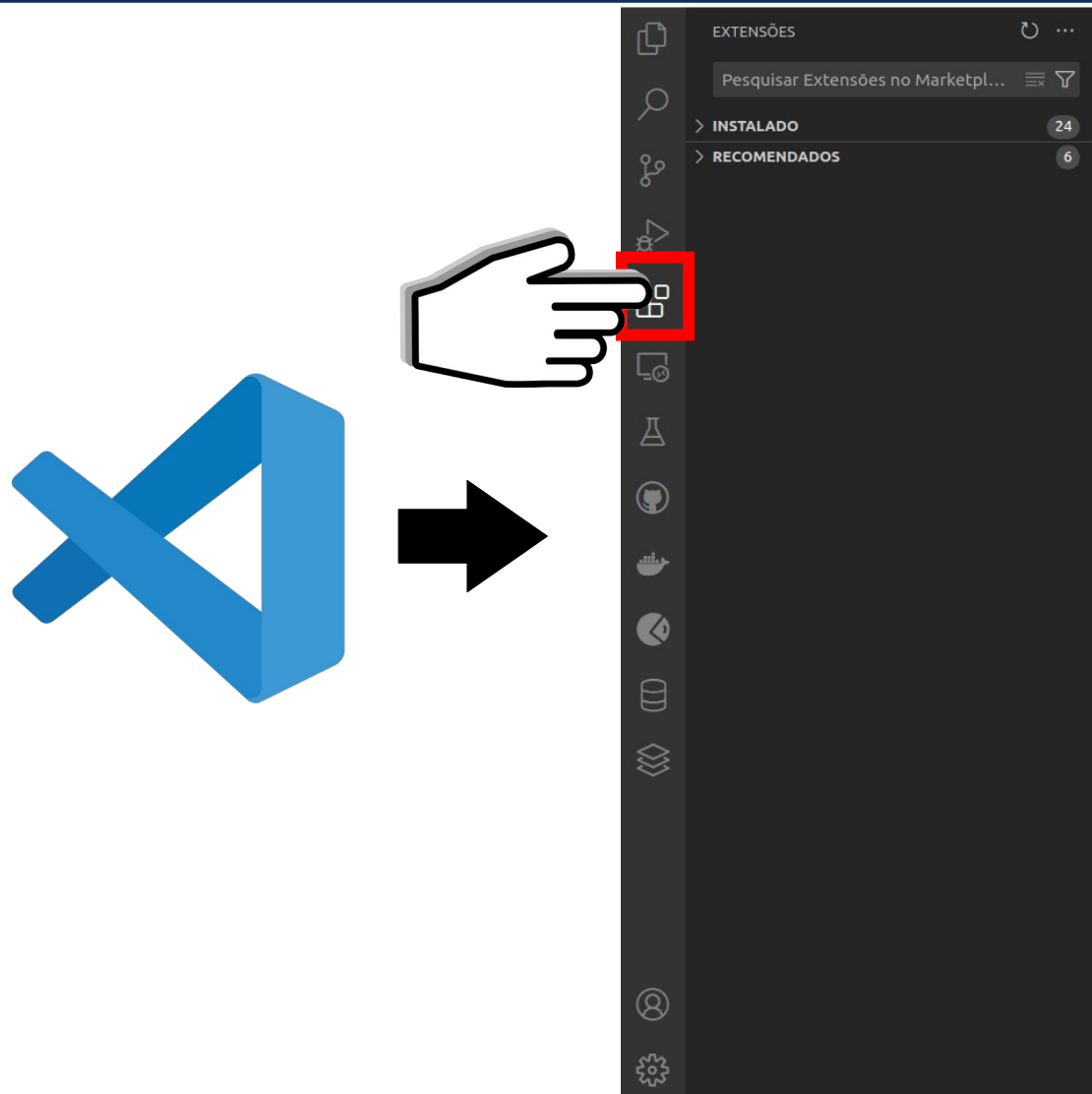


The screenshot shows the Visual Studio Code download page. The browser's address bar is highlighted with a red box, showing the URL `https://code.visualstudio.com/download`. The page features the Visual Studio Code logo, navigation links (Docs, Updates, Blog, API, Extensions, FAQ, Learn), and a prominent blue 'Download' button. A banner below the navigation bar announces 'Version 1.87 is now available!'. The main heading is 'Download Visual Studio Code', followed by the tagline 'Free and built on open source. Integrated Git, debugging and extensions.' Below this, there are three main sections for operating systems: Windows, Linux, and Mac. Each section contains a download button and a list of available installers and their architectures.

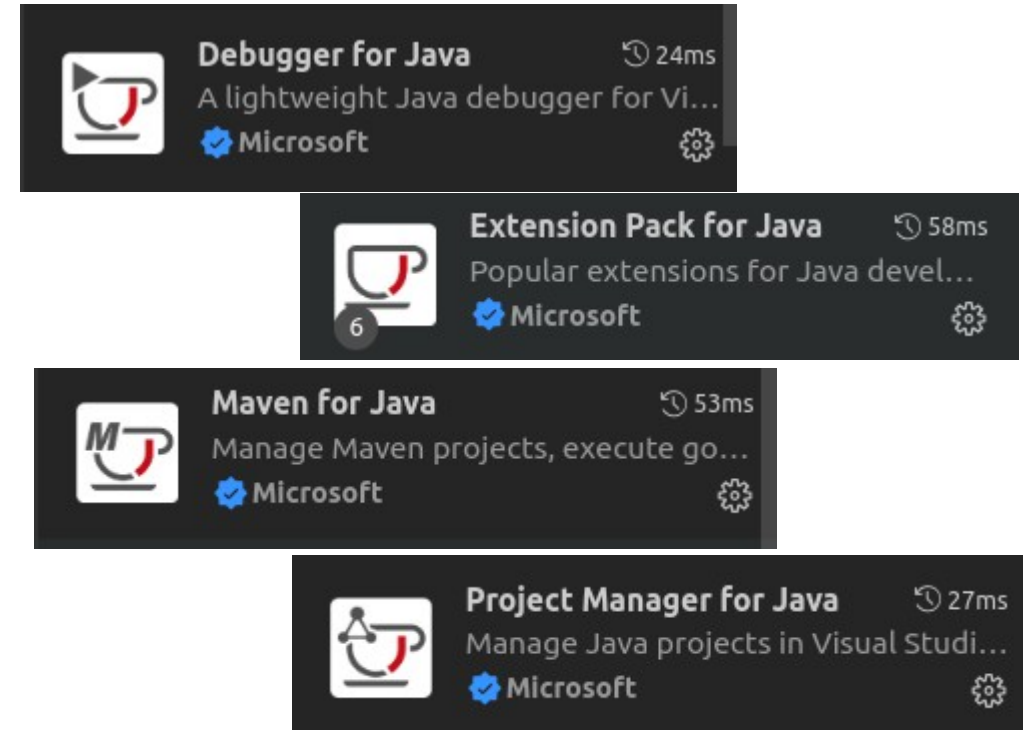
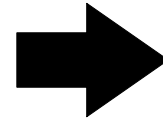
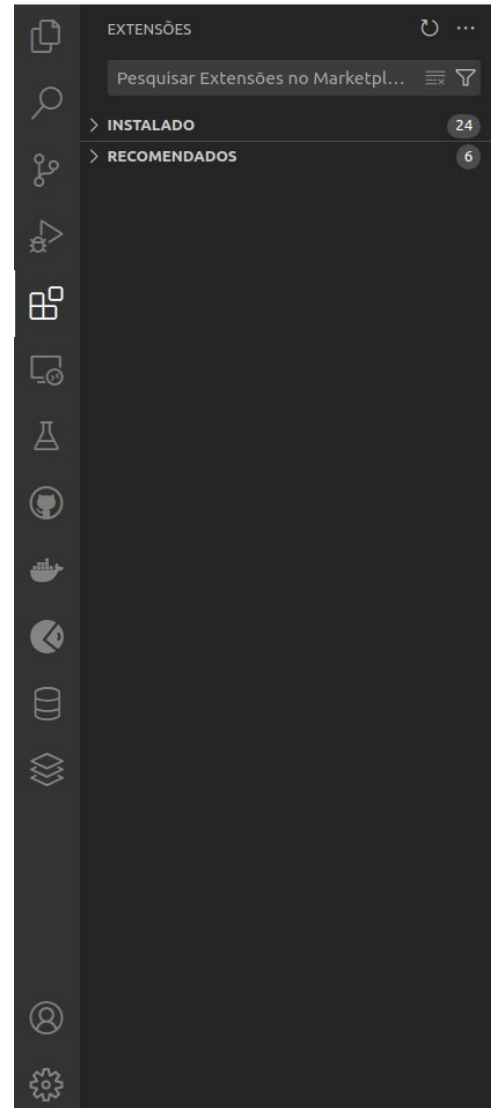
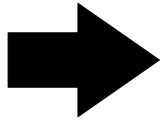
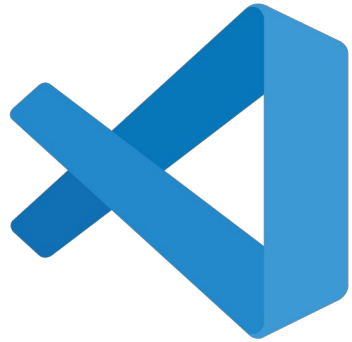
Operating System	Download Link	Available Installers
Windows	Windows 10, 11	User Installer (x64, Arm64), System Installer (x64, Arm64), .zip (x64, Arm64), CLI (x64, Arm64)
Linux	.deb (Debian, Ubuntu), .rpm (Red Hat, Fedora, SUSE)	.deb (x64, Arm32, Arm64), .rpm (x64, Arm32, Arm64), .tar.gz (x64, Arm32, Arm64), Snap (Snap Store), CLI (x64, Arm32, Arm64)
Mac	macOS 10.15+	.zip (Intel chip, Apple silicon, Universal), CLI (Intel chip, Apple silicon)



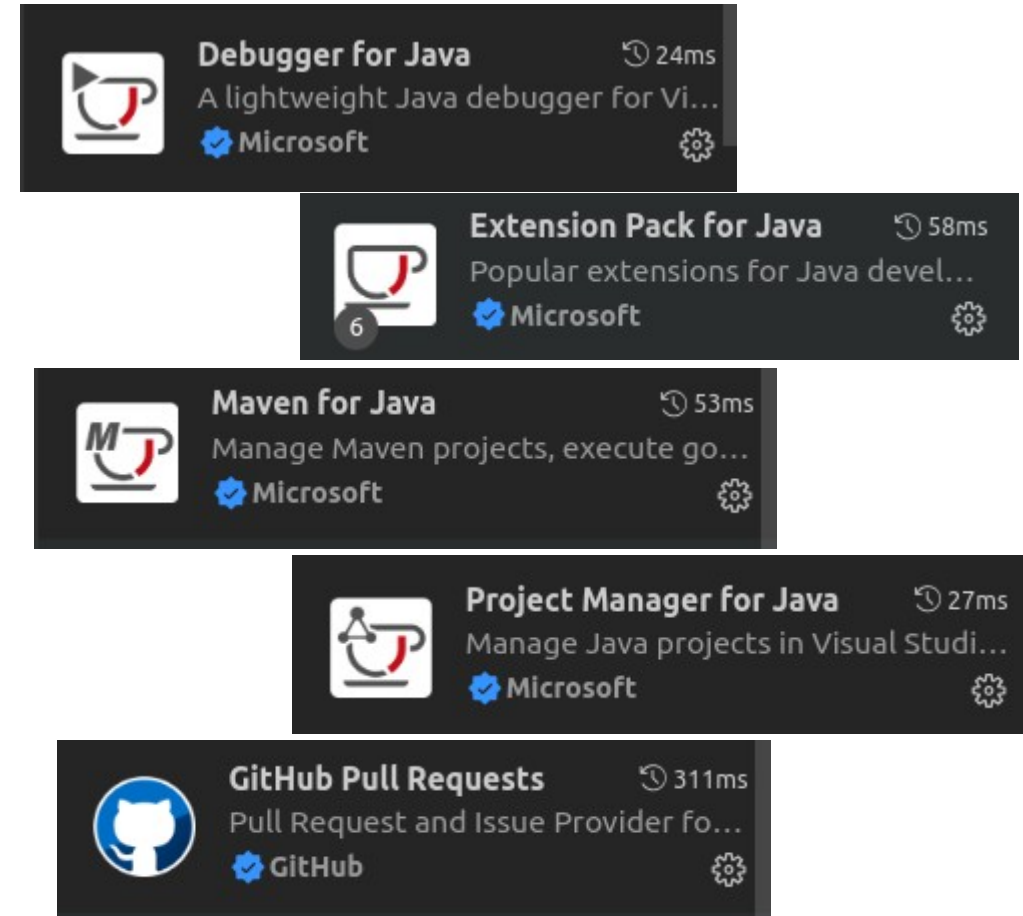
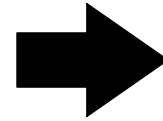
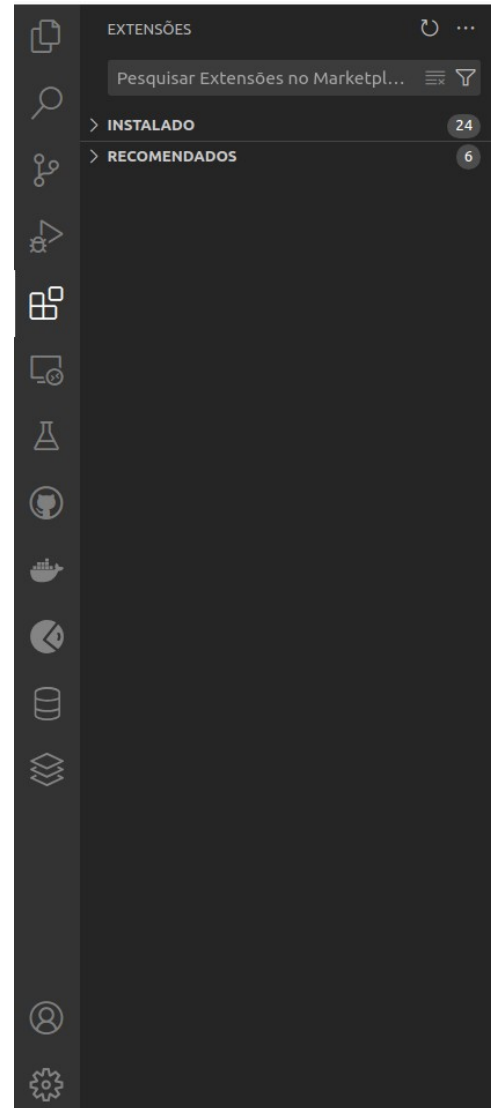
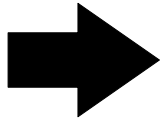




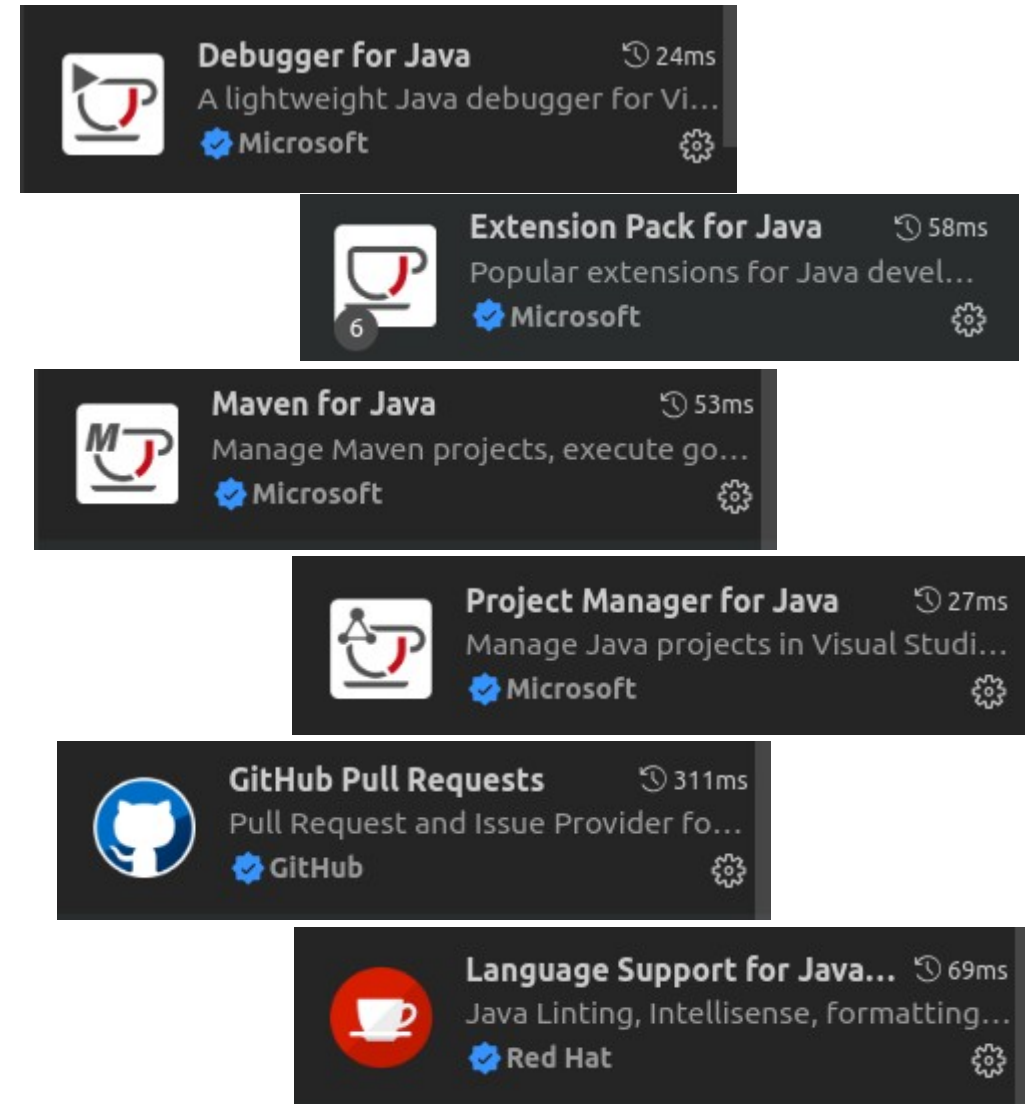
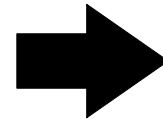
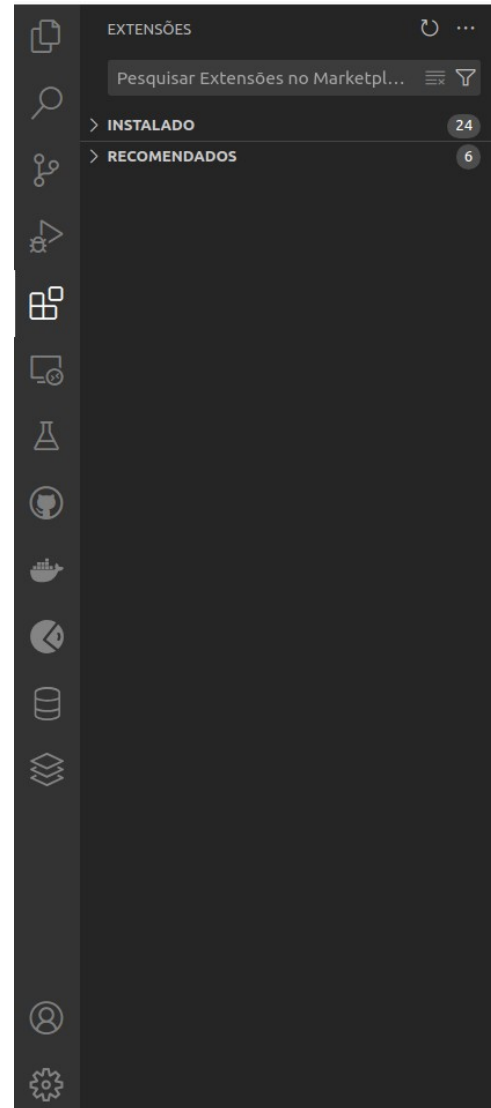
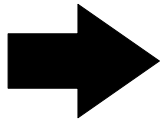
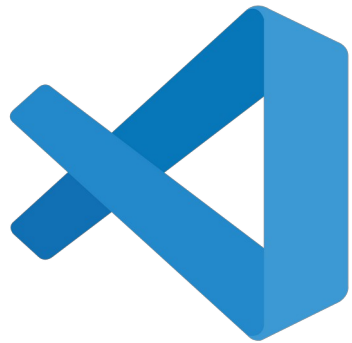
VSCode



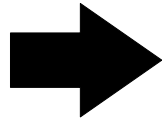
VSCode




VSCode








← → ↻ https://github.com/profpantoja

☰  **profpantoja** 🔍 Type to search

📖 Overview 📁 Repositories 10 📁 Projects 📦 Packages ⭐ Stars 2



Kadu Pantoja
profpantoja

Professor and researcher at CEFET/RJ, master and Ph.D in Computing at the Military Institute of Engineering (IME) and UFF with mobility at Sorbonne UPMC.

Edit profile

👤 62 followers · 8 following

📍 CEFET/RJ
📍 Rio de Janeiro
🔗 <https://turing.pro.br/kadupantoja>
📧 prof.pantoja

profpantoja / README.md

Carpe diem. Make your lives extraordinary.




I work in Artificial Intelligence, more specifically in Multi-agent Systems and Software Engineering, but I have ventured into the areas of Robotics, Ubiquitous Computing, and the Internet of Things. In the management area, I work in technology dissemination (and currently social media), technological innovation, entrepreneurship, and Information Technology Governance and process mapping.

- I'm currently working on [multi-agent-system](#) [embedded-system](#) [modeling-language](#) [metamodel](#)
- I'm collaborating on [JaCaMo](#) [ChonIDE](#)






Research Groups and Projects

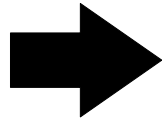
- Member of Cognitive Hardware on Networks Research Group (CHON).
- Co-coordinator of the Brazilian Investment Olympics (OBINVEST).
- Founder of the Turing Project.

Languages and frameworks I've interacted

Follow me on Social Media

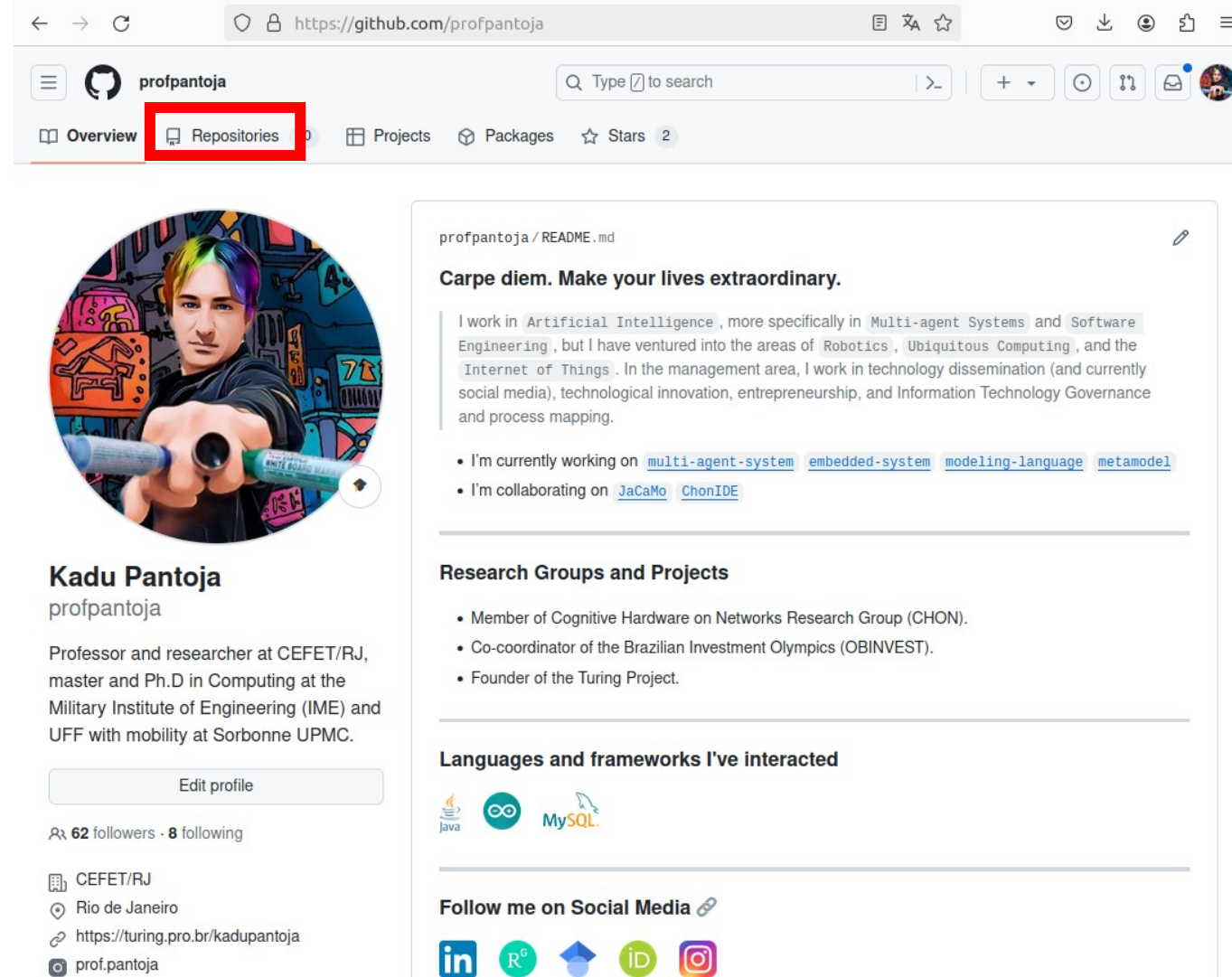
    



← → ↻ https://github.com/profpantoja

profantoja

Overview **Repositories** Projects Packages Stars 2



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Research Groups and Projects

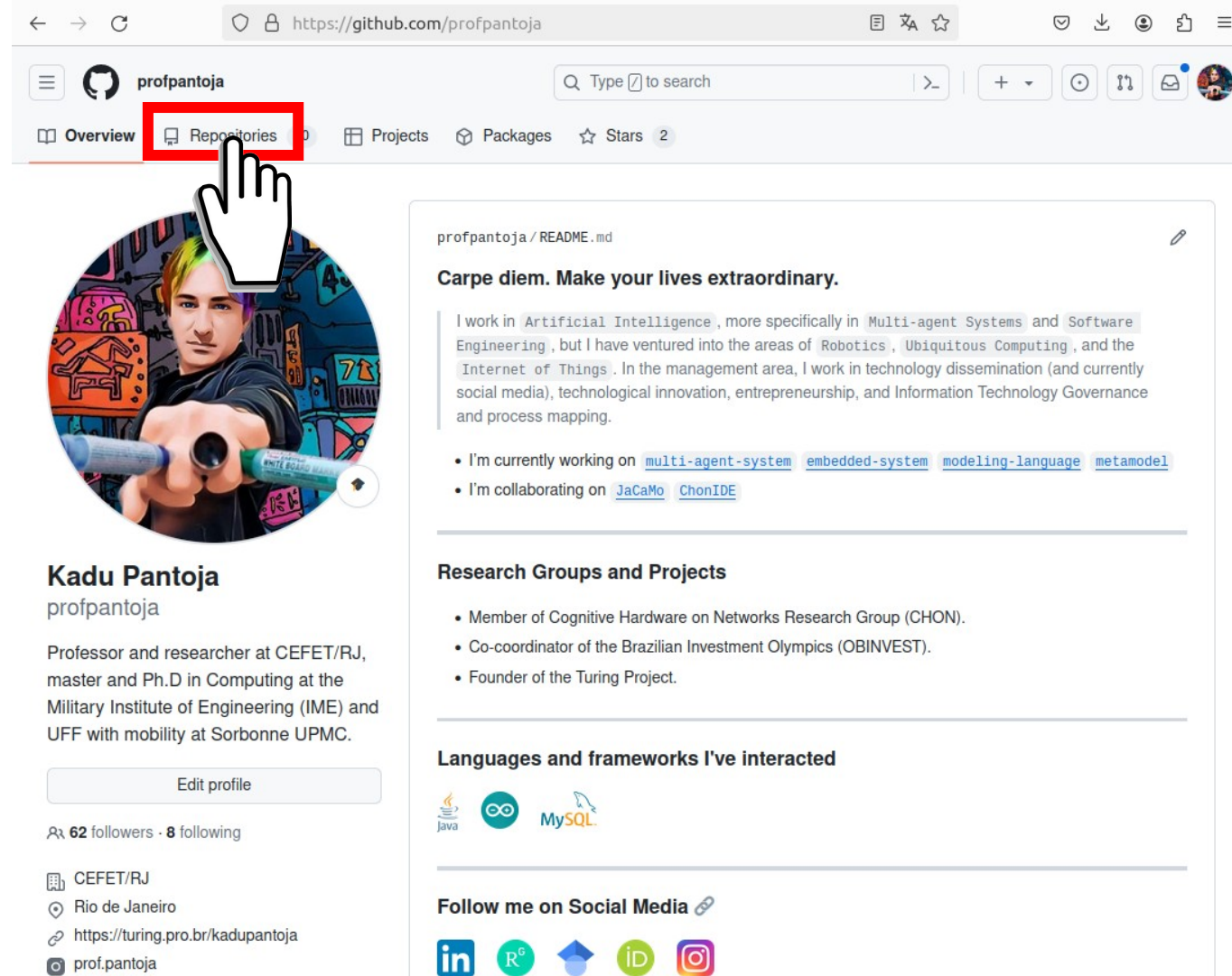
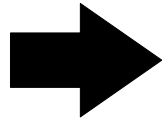
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- Founder of the Turing Project.

Languages and frameworks I've interacted

Follow me on Social Media



The screenshot shows the GitHub profile of 'profpantoja'. The 'Repositories' tab is highlighted with a red box and a hand cursor. The profile includes a circular avatar of a person with colorful hair, a bio, a list of followers/following, location, website, and social media links. The right sidebar contains a README for 'profpantoja / README.md' with a bio, a list of current work and collaborations, research groups, and languages/frameworks interacted with.

profpantoja

Overview Repositories Projects Packages Stars 2

Kadu Pantoja
profpantoja

Professor and researcher at CEFET/RJ, master and Ph.D in Computing at the Military Institute of Engineering (IME) and UFF with mobility at Sorbonne UPMC.

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62 followers · 8 following

CEFET/RJ
Rio de Janeiro
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prof.pantoja

profpantoja / README.md

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Research Groups and Projects

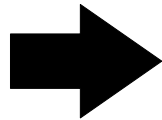
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- Founder of the Turing Project.

Languages and frameworks I've interacted

Java ∞ MySQL

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Screenshot of the GitHub profile page for **profpantoja** (Kadu Pantoja).

Profile Information:

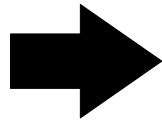
- Name:** Kadu Pantoja
- Username:** profpantoja
- Location:** Rio de Janeiro
- Website:** <https://turing.pro.br/kadupantoja>
- GitHub Bio:** Professor and researcher at CEFET/RJ, master and Ph.D in Computing at the Military Institute of Engineering (IME) and UFF with mobility at Sorbonne UPMC.
- Followers:** 62
- Following:** 8

Repositories:

- java-exercicios** (Public)
 - Description: Repositório das listas de Exercícios da disciplina de Linguagens e Técnicas de Programação II
 - Language: Java
 - Stars: 1
 - Updated: yesterday
- chonGame** (Private)
 - Description: A JavaFX game for learning the main concepts from the object-oriented approach.
 - Language: Java
 - Updated: 2 weeks ago
- bd-exercicios** (Public)
 - Description: Repositório das listas de Exercícios da disciplina de Modelagem de Banco de Dados e Banco de Dados.
 - Stars: 1
 - Updated: on Dec 13, 2023

Languages and frameworks I've interacted: Java, React, MySQL

Follow me on Social Media: LinkedIn, ResearchGate, YouTube, ID, Instagram



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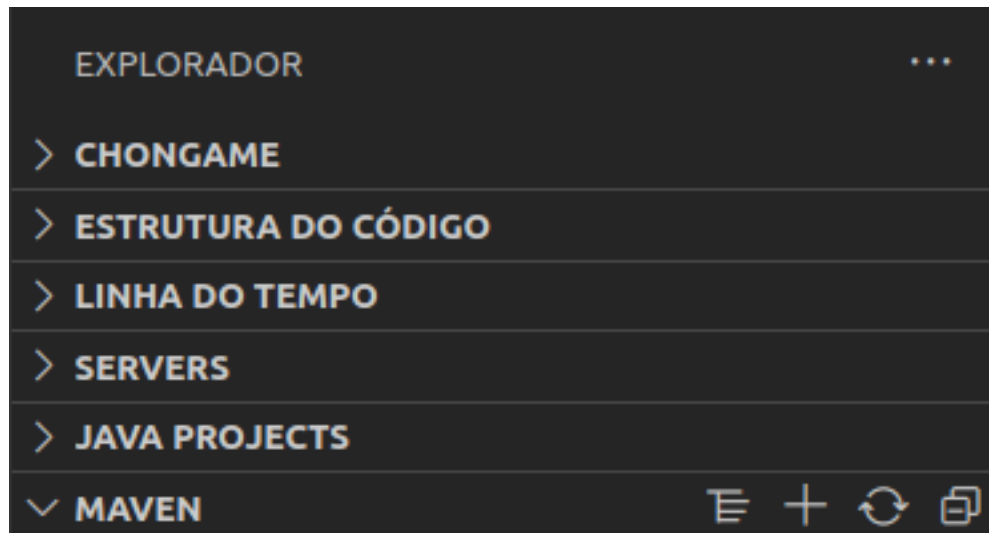
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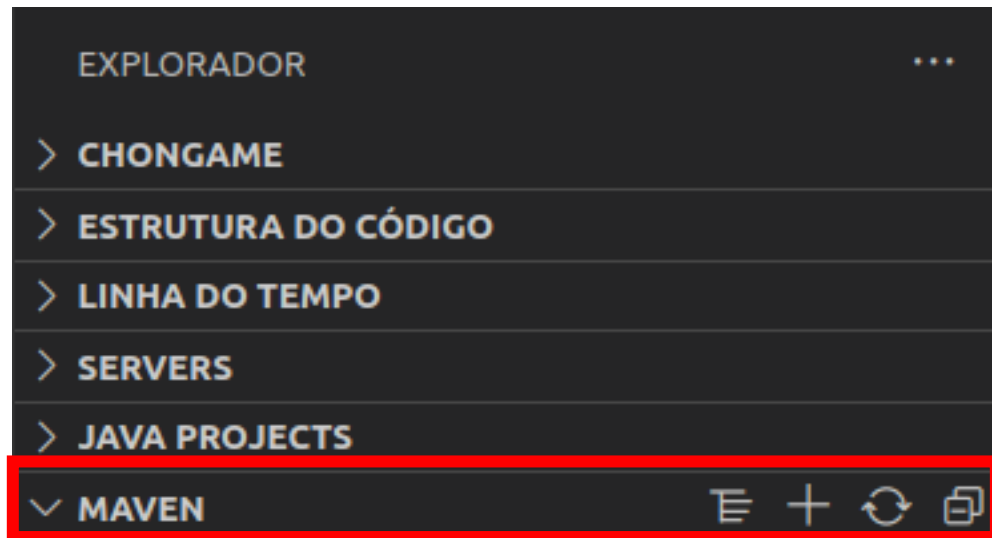
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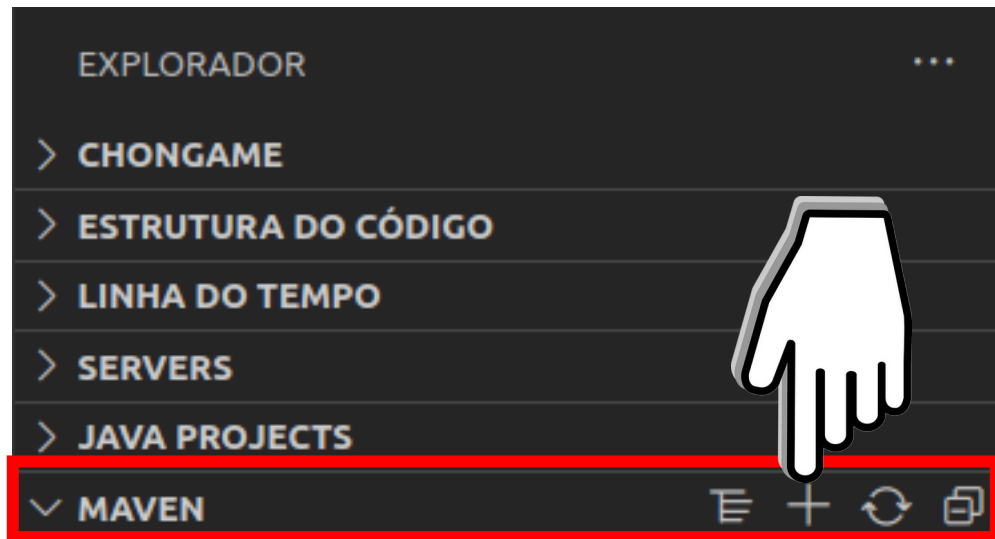
Creating a New Maven Project



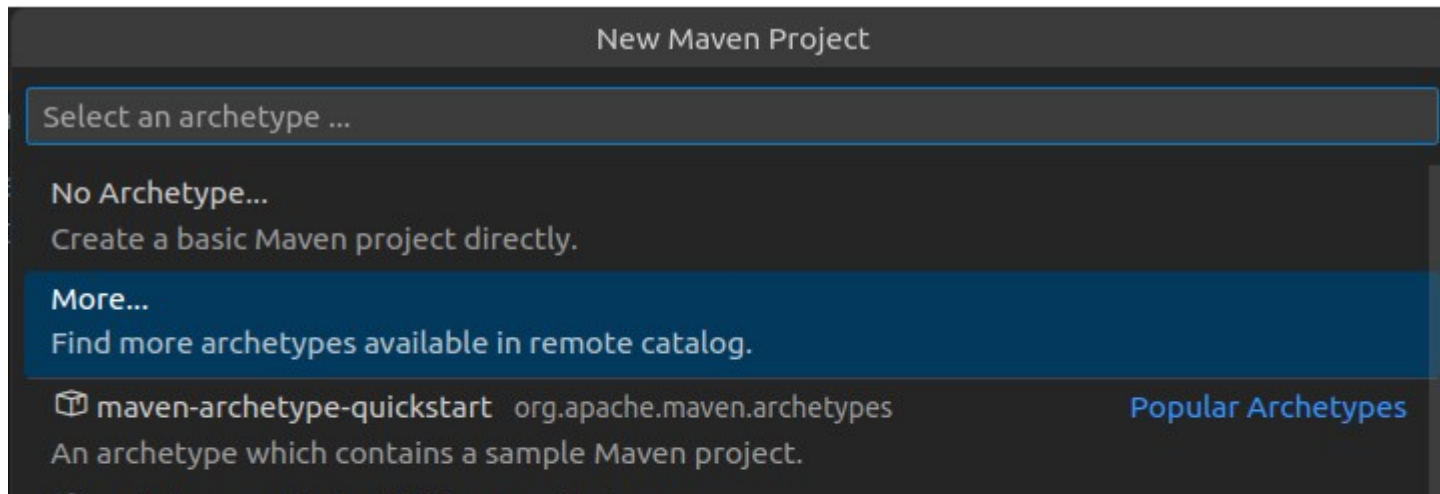
Creating a New Maven Project



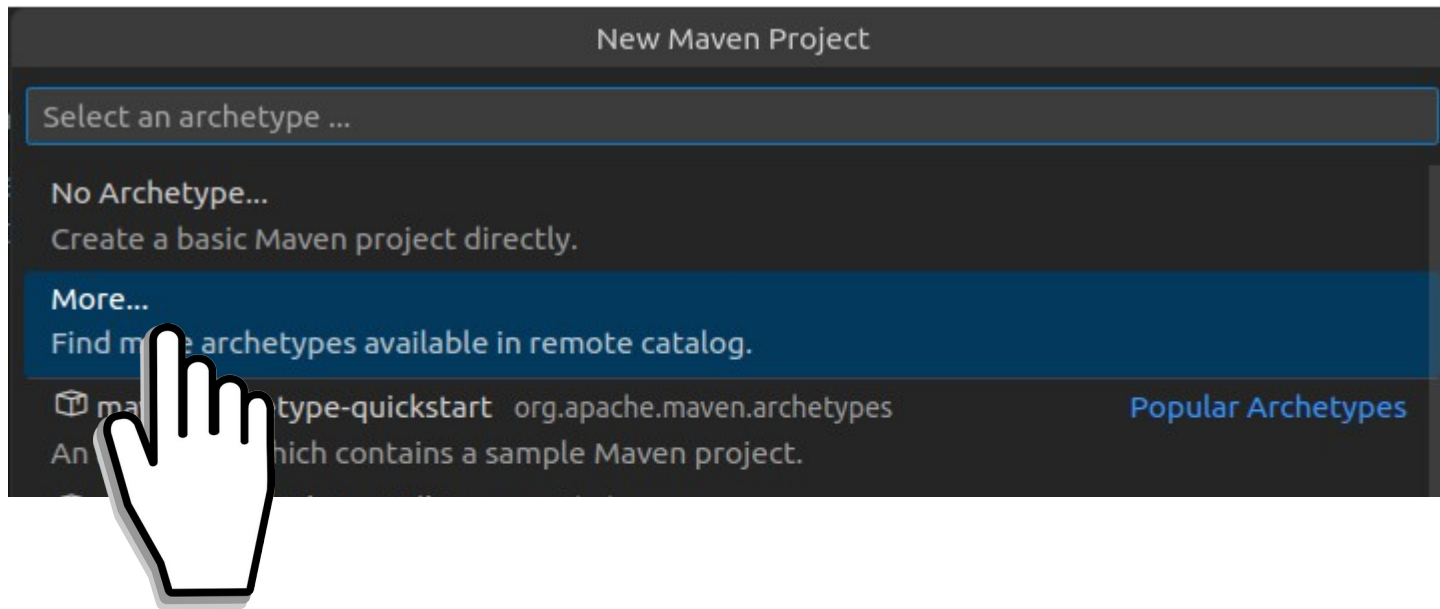
Creating a New Maven Project



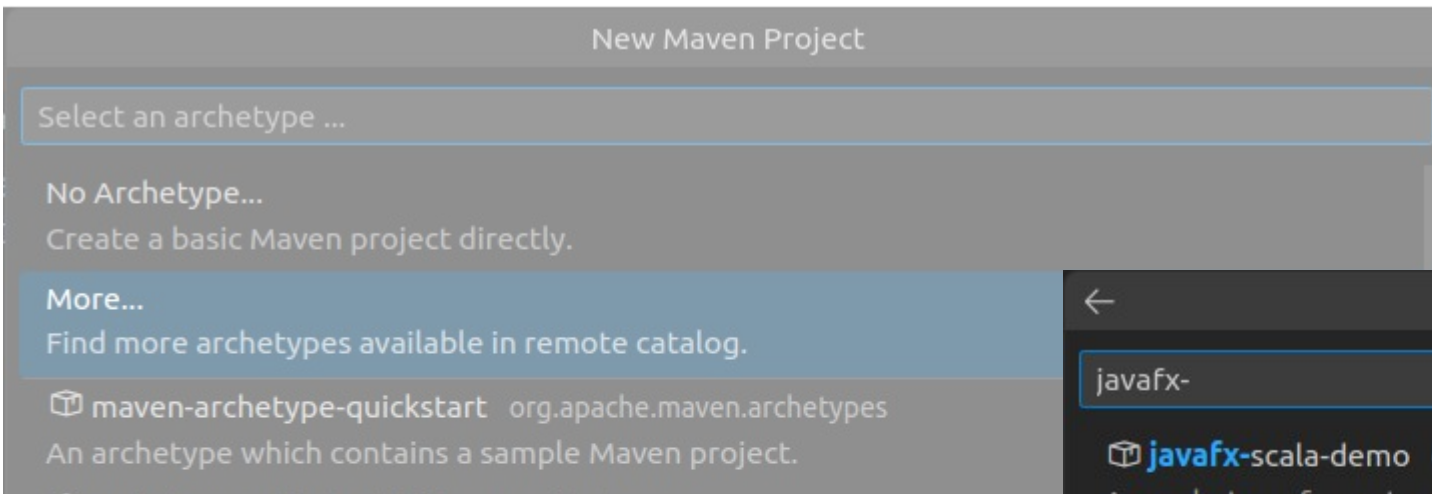
Creating a New Maven Project



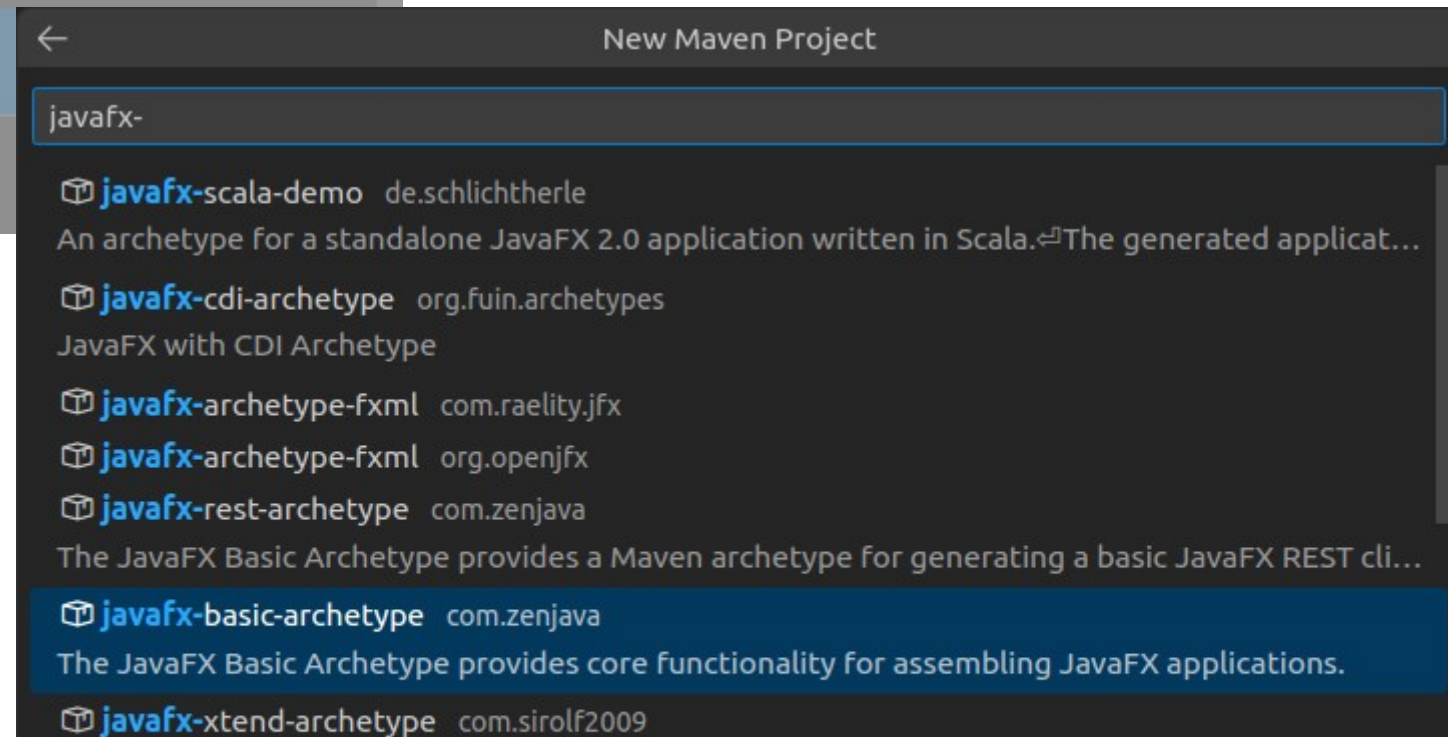
Creating a New Maven Project



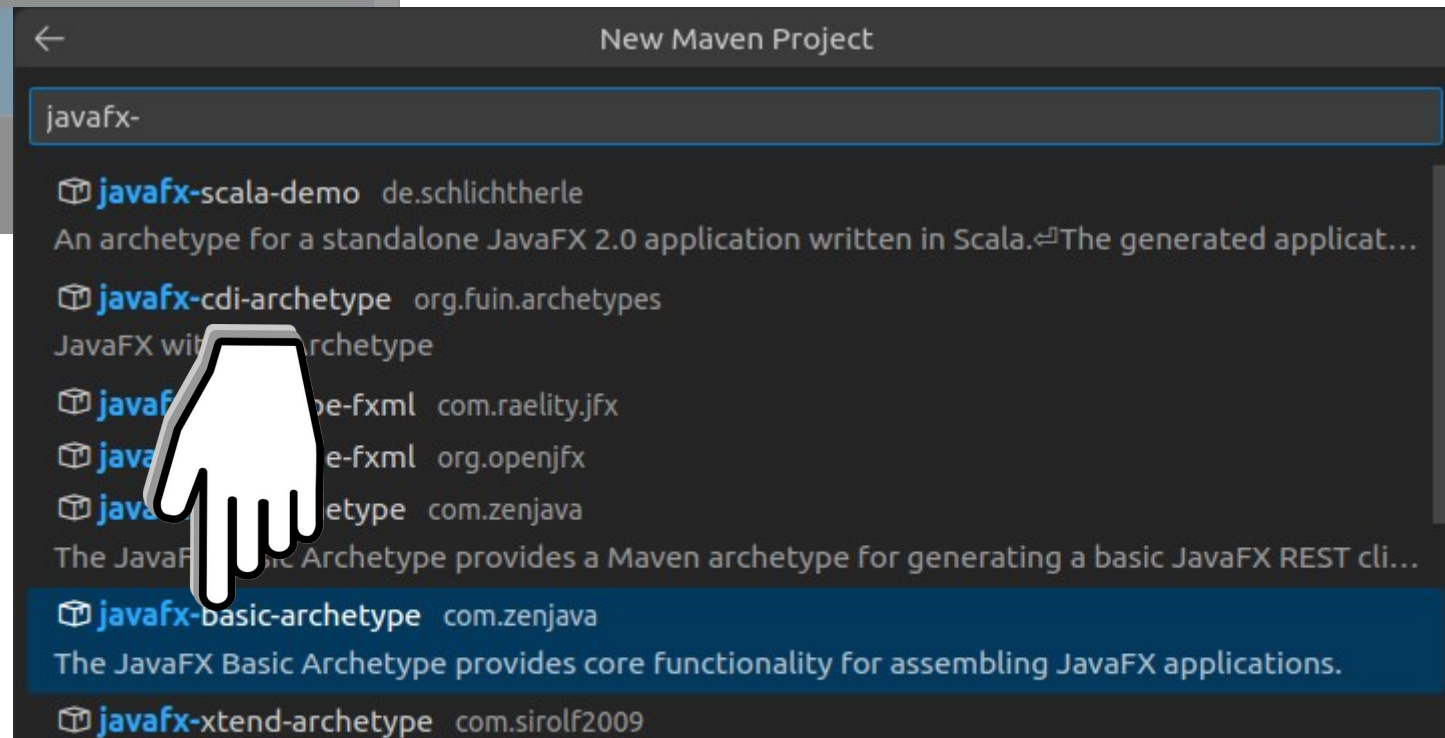
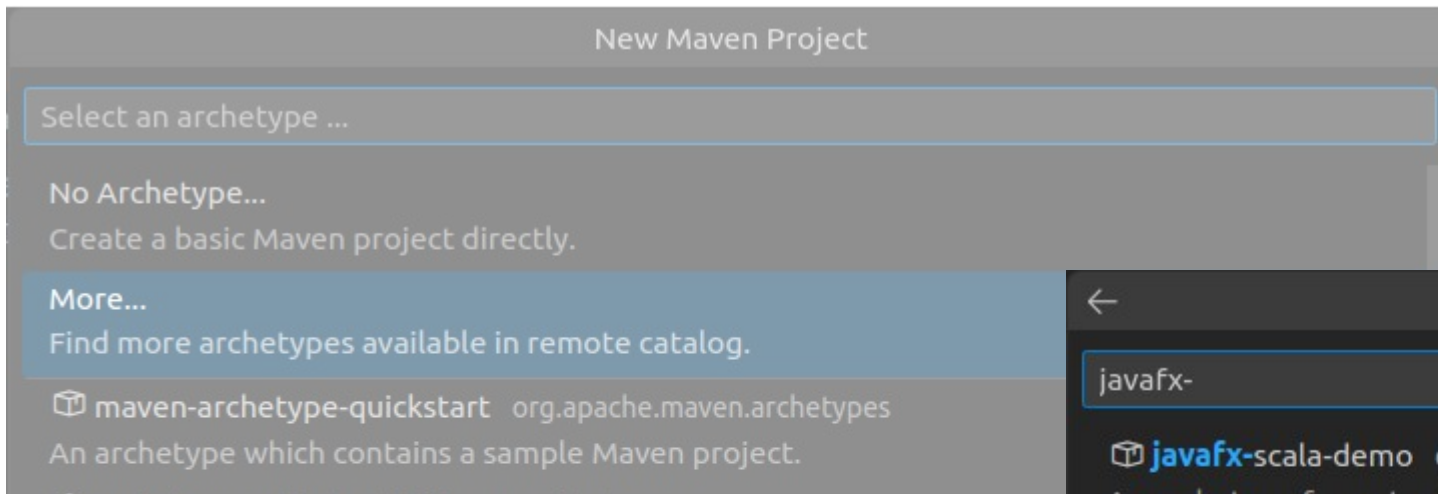
Creating a New Maven Project



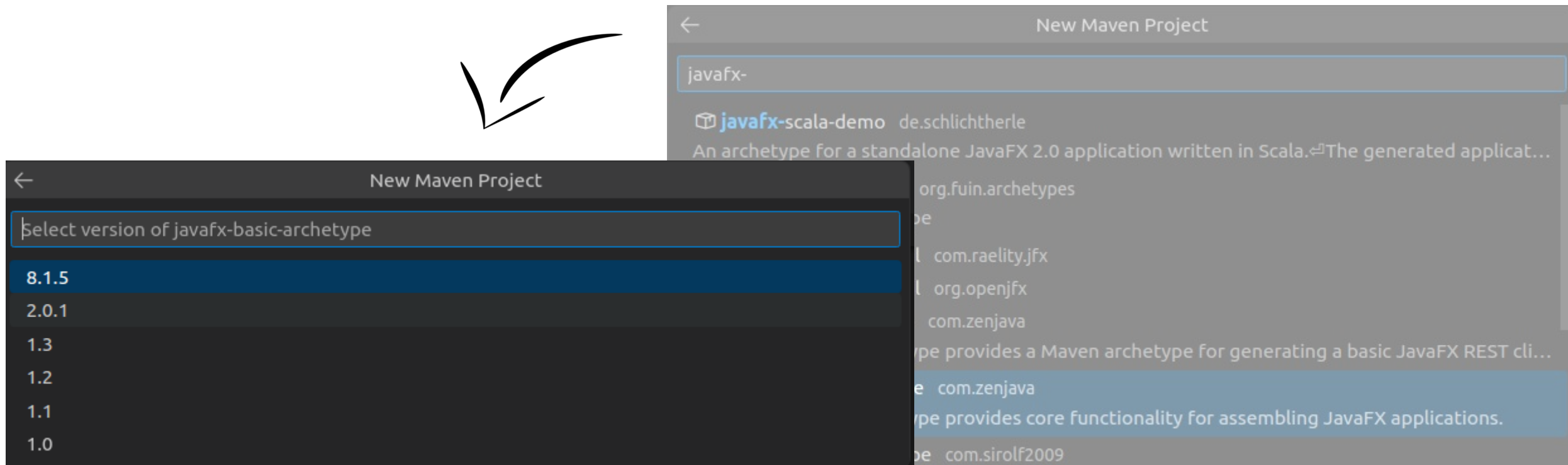
javafx-basic-archetype



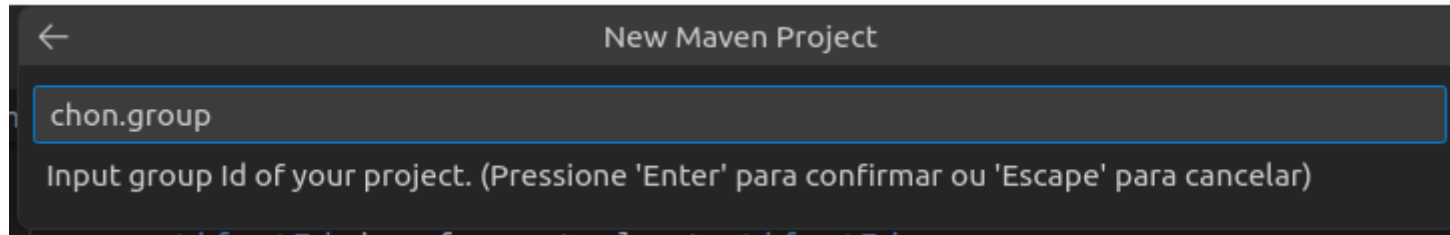
Creating a New Maven Project



Creating a New Maven Project



Creating a New Maven Project

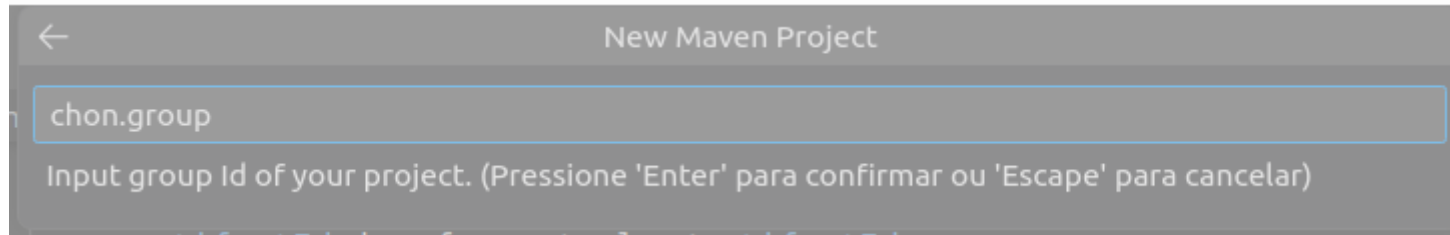


← New Maven Project

chon.group

Input group Id of your project. (Pressione 'Enter' para confirmar ou 'Escape' para cancelar)

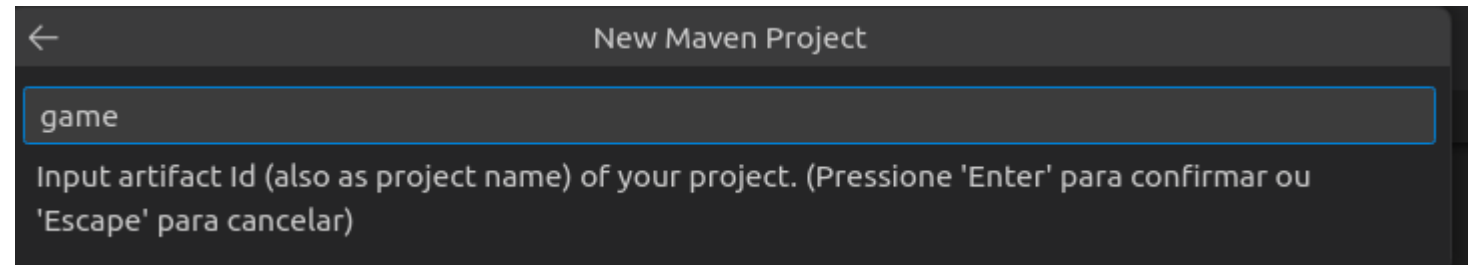
Creating a New Maven Project



← New Maven Project

chon.group

Input group Id of your project. (Pressione 'Enter' para confirmar ou 'Escape' para cancelar)



← New Maven Project

game

Input artifact Id (also as project name) of your project. (Pressione 'Enter' para confirmar ou 'Escape' para cancelar)

Creating a New Maven Project

```
○ * Executando tarefa: mvn org.apache.maven.plugins:maven-archetype-plugin:3.1.2:generate -DarchetypeArtifactId="javafx-basi
c-archetype" -DarchetypeGroupId="com.zenjava" -DarchetypeVersion="8.1.5" -DgroupId="chon.group" -DartifactId="game"

[INFO] Scanning for projects...
[INFO]
[INFO] -----< chon.group:game >-----
[INFO] Building game 1
[INFO] -----[ jar ]-----
[INFO]
[INFO] >>> maven-archetype-plugin:3.1.2:generate (default-cli) > generate-sources @ game >>>
[INFO]
[INFO] <<< maven-archetype-plugin:3.1.2:generate (default-cli) < generate-sources @ game <<<
[INFO]
[INFO] --- maven-archetype-plugin:3.1.2:generate (default-cli) @ game ---
[INFO] Generating project in Interactive mode
[INFO] Archetype repository not defined. Using the one from [com.zenjava:javafx-basic-archetype:8.1.5] found in catalog remo
te
Downloading from central: https://repo.maven.apache.org/maven2/com/zenjava/javafx-basic-archetype/8.1.5/javafx-basic-archety
pe-8.1.5.pom
Downloaded from central: https://repo.maven.apache.org/maven2/com/zenjava/javafx-basic-archetype/8.1.5/javafx-basic-archety
e-8.1.5.pom (6.2 kB at 17 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/com/zenjava/javafx-basic-archetype/8.1.5/javafx-basic-archety
pe-8.1.5.jar
Downloaded from central: https://repo.maven.apache.org/maven2/com/zenjava/javafx-basic-archetype/8.1.5/javafx-basic-archety
e-8.1.5.jar (145 kB at 188 kB/s)
[INFO] Using property: groupId = chon.group
[INFO] Using property: artifactId = game
Define value for property 'version' 1.0-SNAPSHOT: :
```

Creating a New Maven Project

```
o * Executando tarefa: mvn org.apache.maven.plugins:maven-archetype-plugin:3.1.2:generate -DarchetypeArtifactId="javafx-basic-archetype" -DarchetypeGroupId="com.zenjava" -DarchetypeVersion="8.1.5" -DgroupId="chon.group" -DartifactId="game"
```

```
[INFO] Scanning for projects...
```

```
[INFO]
```

```
[INFO] -----< chon.group:game >-----
```

```
[INFO] Building game 1
```

```
[INFO] -----[ jar ]-----
```

```
[INFO]
```

```
[INFO] >>> maven-archetype-plugin:3.1.2:generate (default-cli) > generate-sources @ game >>>
```

```
[INFO]
```

```
[INFO] <<< maven-archetype-plugin:3.1.2:generate (default-cli) < generate-sources @ game <<<
```

```
[INFO]
```

```
[INFO] --- maven-archetype-plugin:3.1.2:generate (default-cli) @ game ---
```

```
[INFO] Generating project in Interactive mode
```

```
[INFO] Archetype repository not defined. Using the one from [com.zenjava:javafx-basic-archetype:8.1.5] found in catalog remote
```

```
Downloading from central: https://repo.maven.apache.org/maven2/com/zenjava/javafx-basic-archetype-8.1.5.pom
```

```
Downloaded from central: https://repo.maven.apache.org/maven2/com/zenjava/javafx-basic-archetype-8.1.5.pom (6.2 kB at 17 kB/s)
```

```
Downloading from central: https://repo.maven.apache.org/maven2/com/zenjava/javafx-basic-archetype-8.1.5.jar
```

```
Downloaded from central: https://repo.maven.apache.org/maven2/com/zenjava/javafx-basic-archetype-8.1.5.jar (145 kB at 188 kB/s)
```

```
[INFO] Using property: groupId = chon.group
```

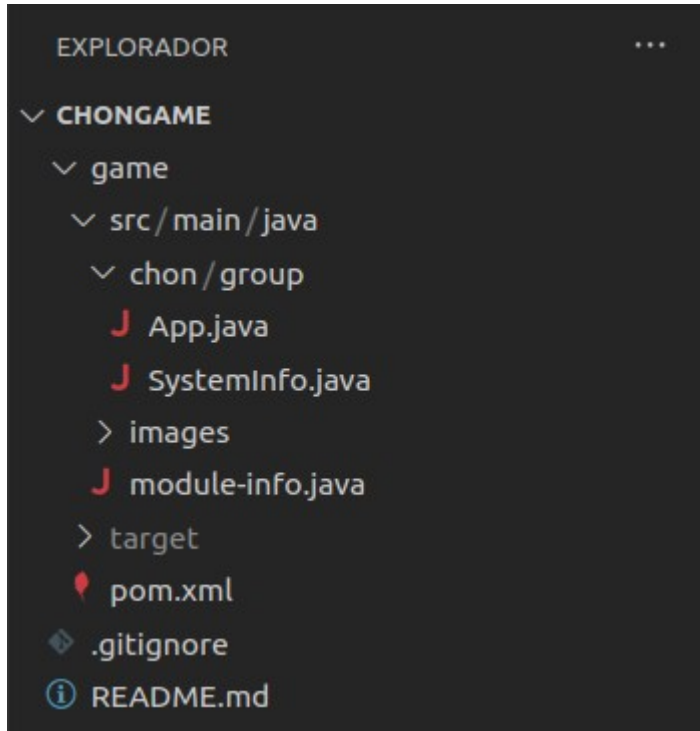
```
[INFO] Using property: artifactId = game
```

```
Define value for property 'version' 1.0-SNAPSHOT: :
```

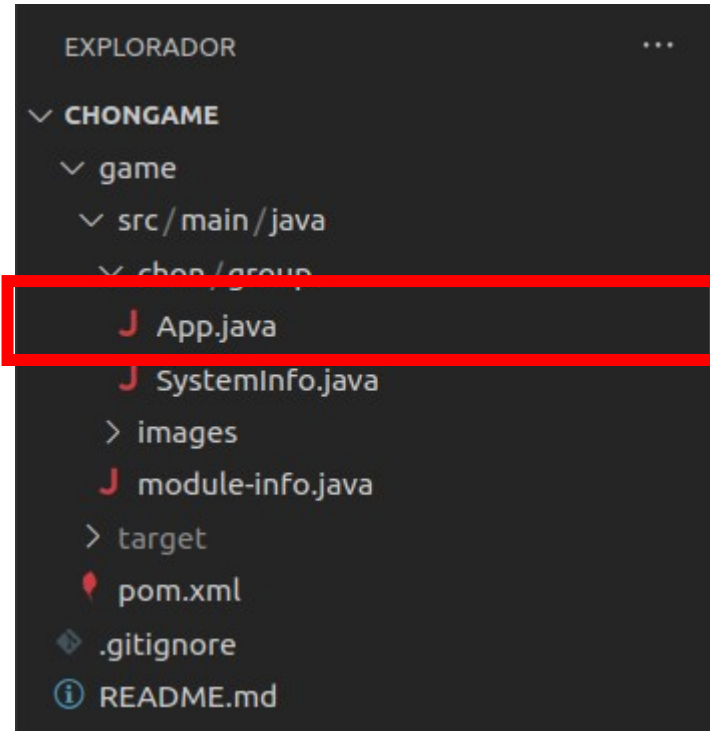
```
[INFO] Using property: groupId = chon.group
[INFO] Using property: artifactId = game
Define value for property 'version' 1.0-SNAPSHOT: : 1
[INFO] Using property: package = chon.group
Define value for property 'organizationName': chon
Confirm properties configuration:
groupId: chon.group
artifactId: game
version: 1
package: chon.group
organizationName: chon
Y: : Y
```



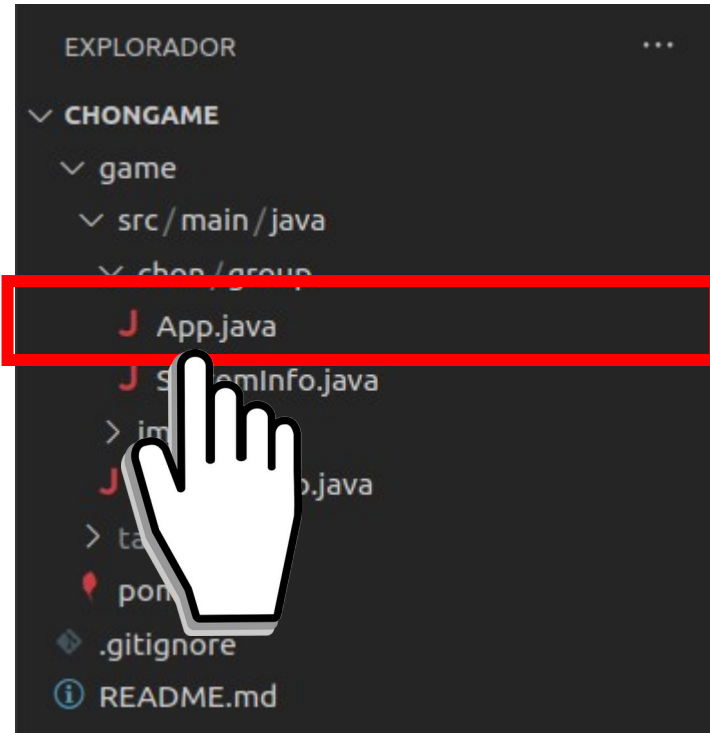
Java FX App Running



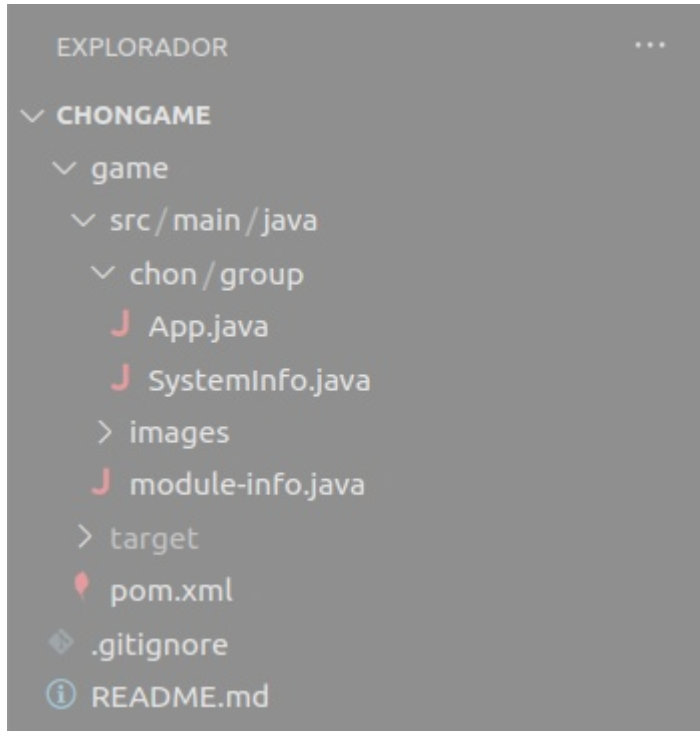
Java FX App Running



Java FX App Running

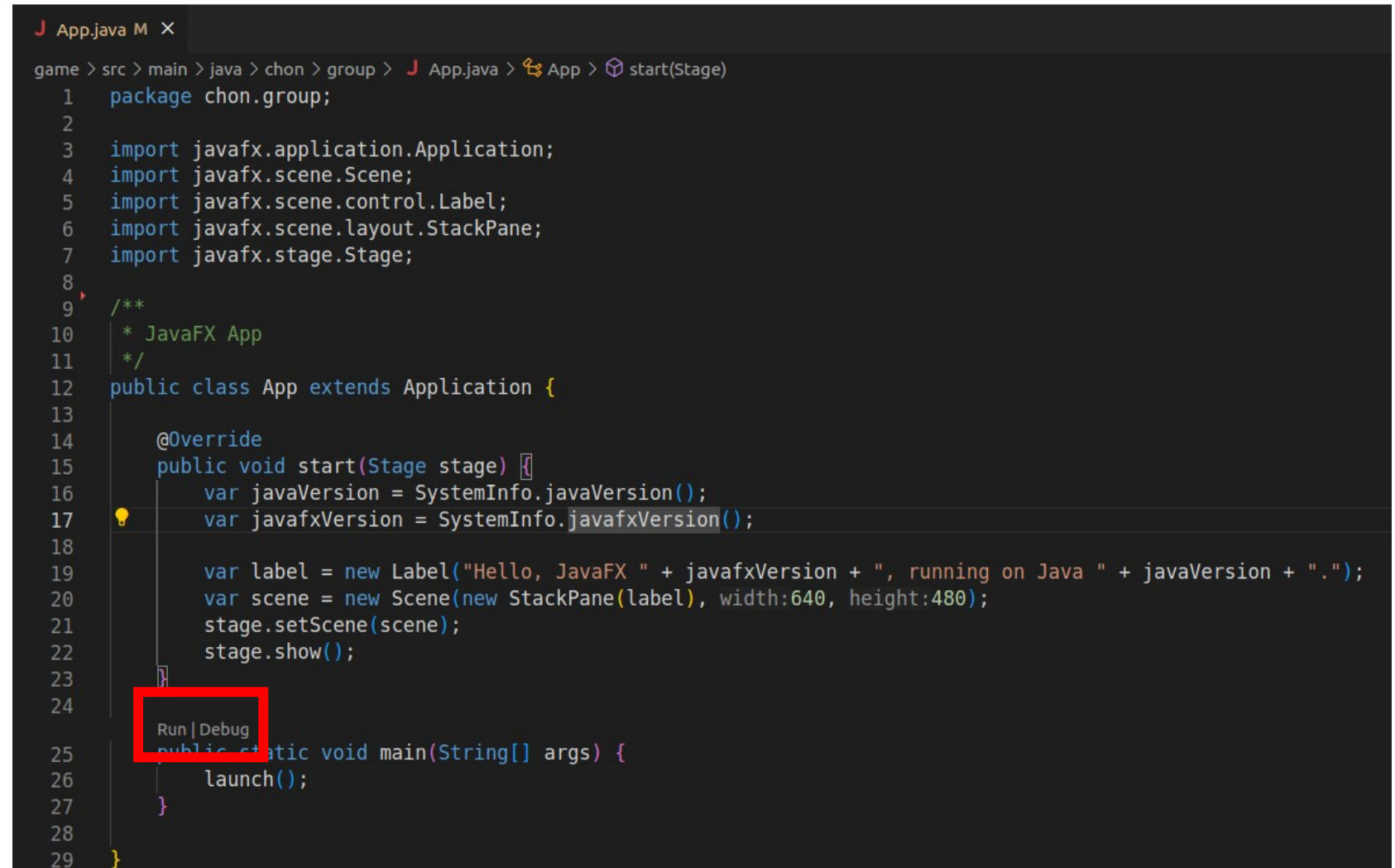
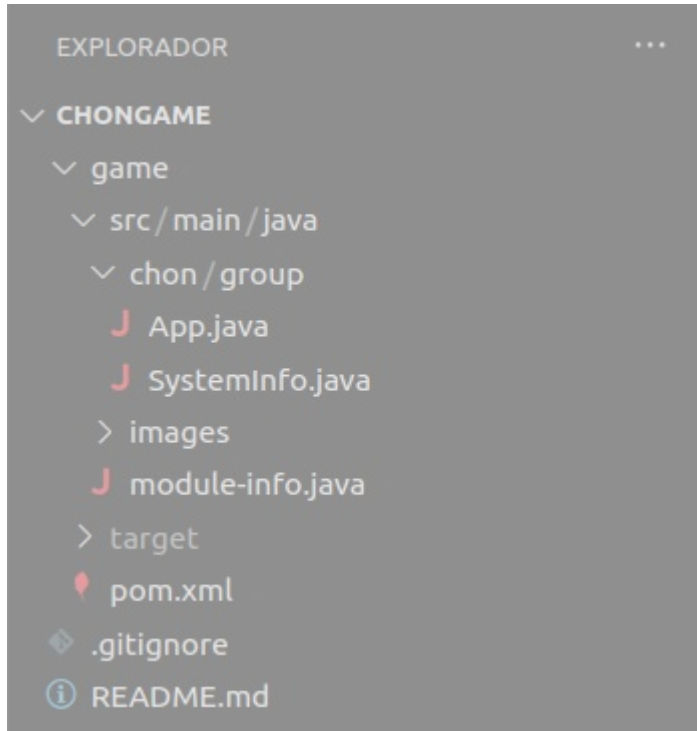


Java FX App Running

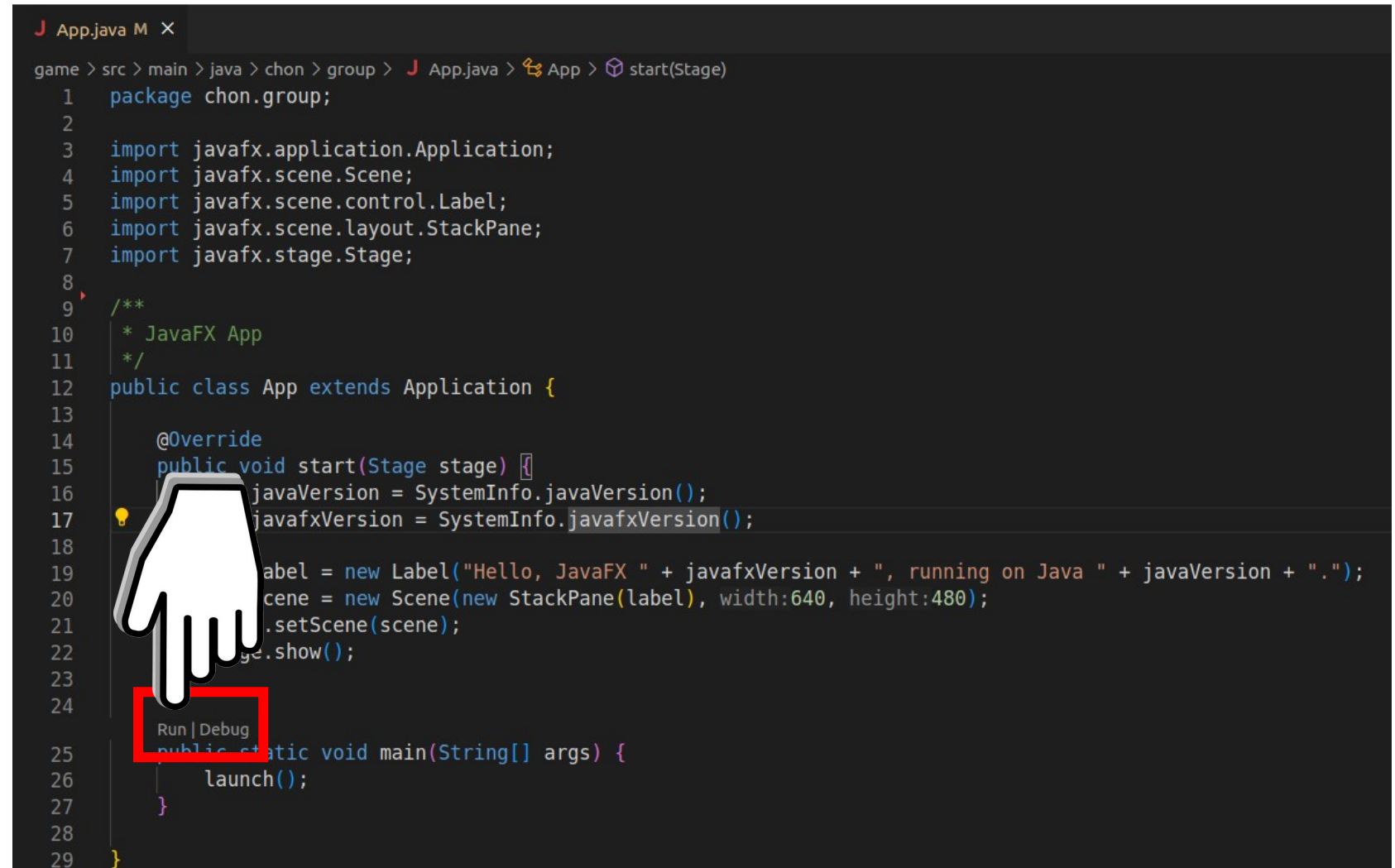
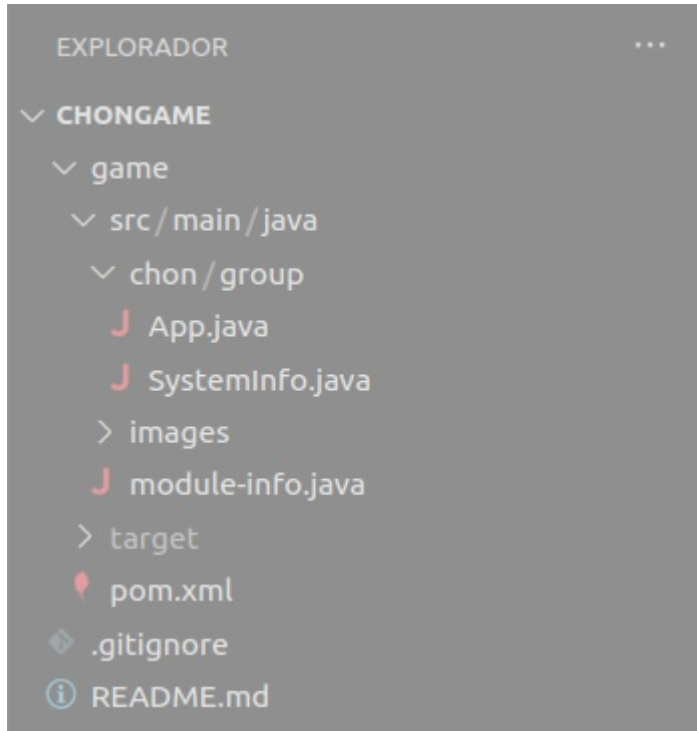


```
J App.java M X
game > src > main > java > chon > group > J App.java > App > start(Stage)
1  package chon.group;
2
3  import javafx.application.Application;
4  import javafx.scene.Scene;
5  import javafx.scene.control.Label;
6  import javafx.scene.layout.StackPane;
7  import javafx.stage.Stage;
8
9  /**
10   * JavaFX App
11   */
12  public class App extends Application {
13
14      @Override
15      public void start(Stage stage) {
16          var javaVersion = SystemInfo.javaVersion();
17          var javafxVersion = SystemInfo.javafxVersion();
18
19          var label = new Label("Hello, JavaFX " + javafxVersion + ", running on Java " + javaVersion + ".");
20          var scene = new Scene(new StackPane(label), width:640, height:480);
21          stage.setScene(scene);
22          stage.show();
23      }
24
25      Run | Debug
26      public static void main(String[] args) {
27          launch();
28      }
29  }
```

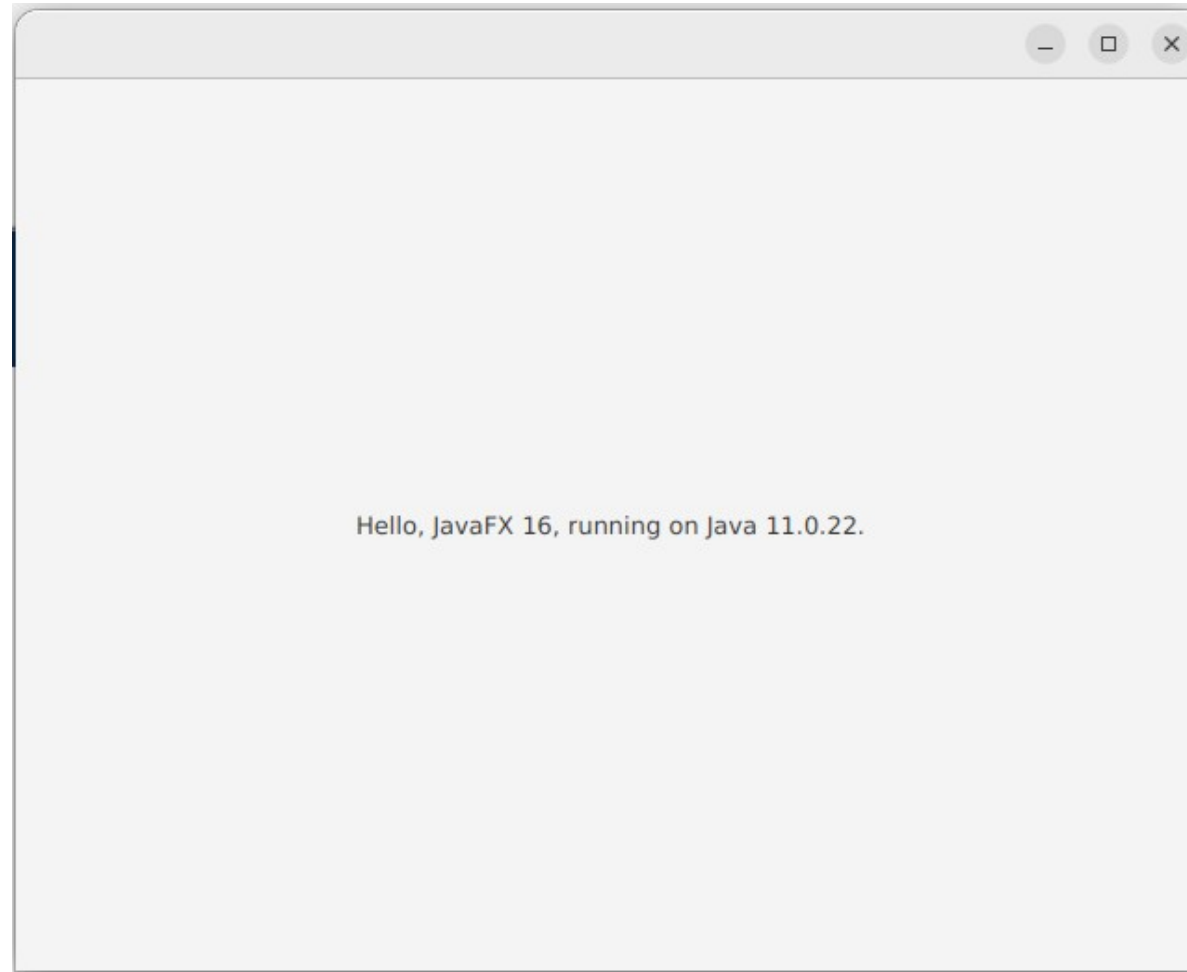
Java FX App Running



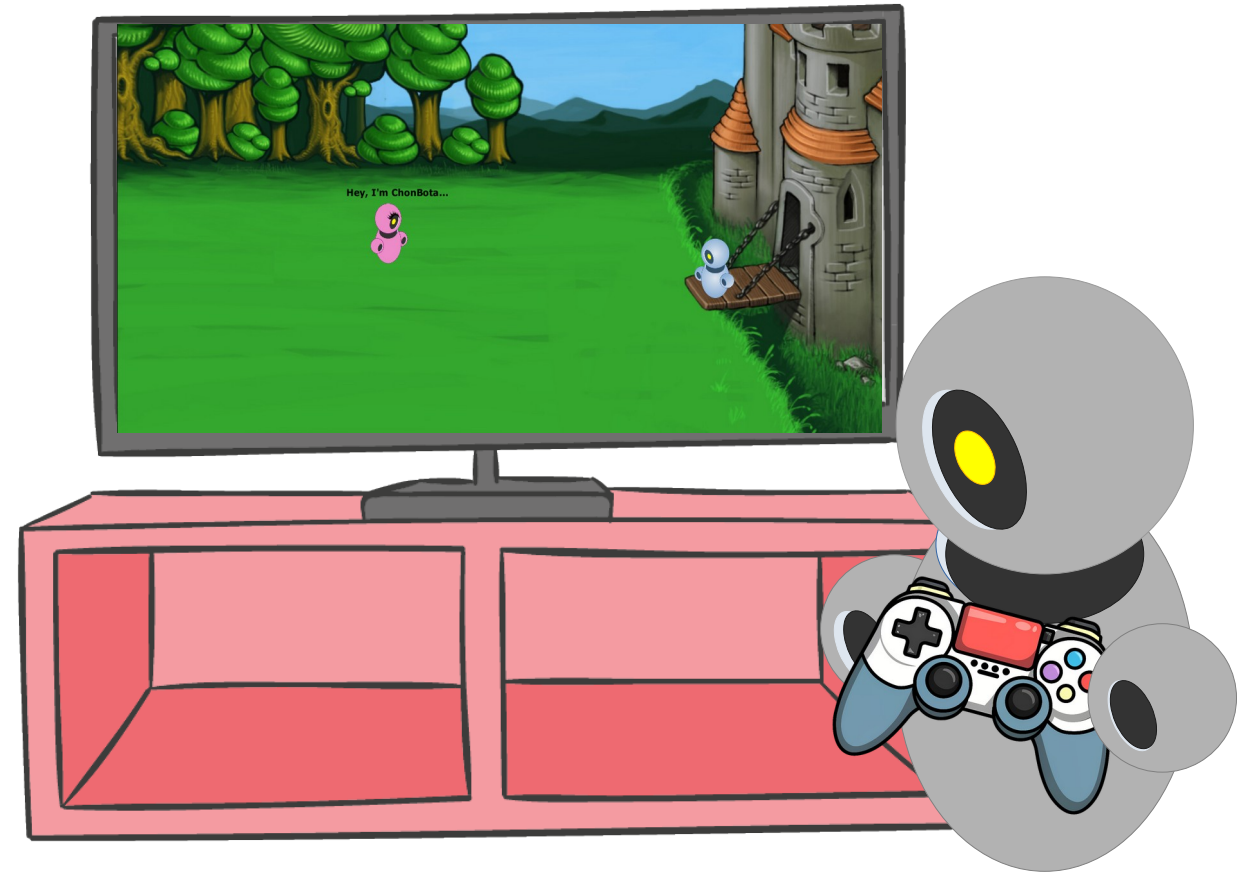
Java FX App Running



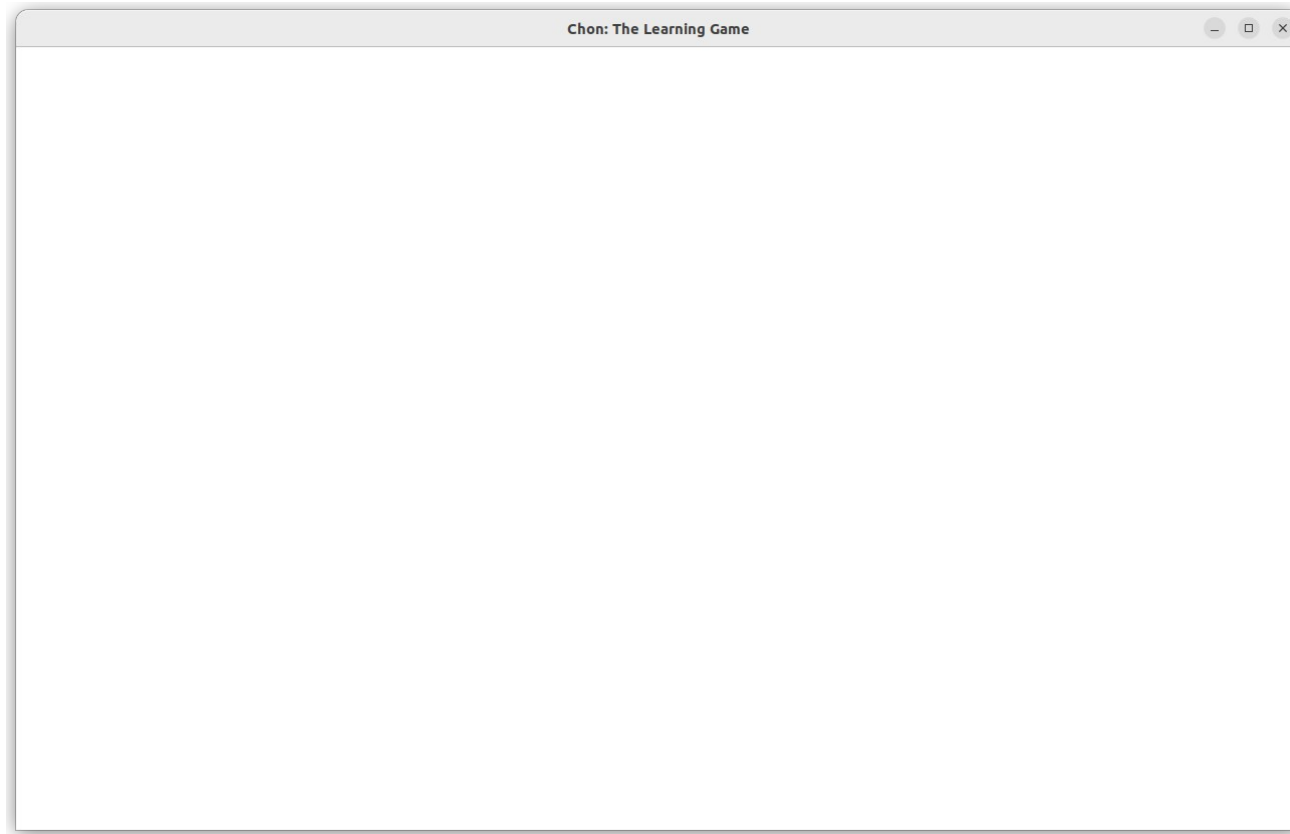
Java FX App Running



MANIPULATING GRAPHICAL ELEMENTS

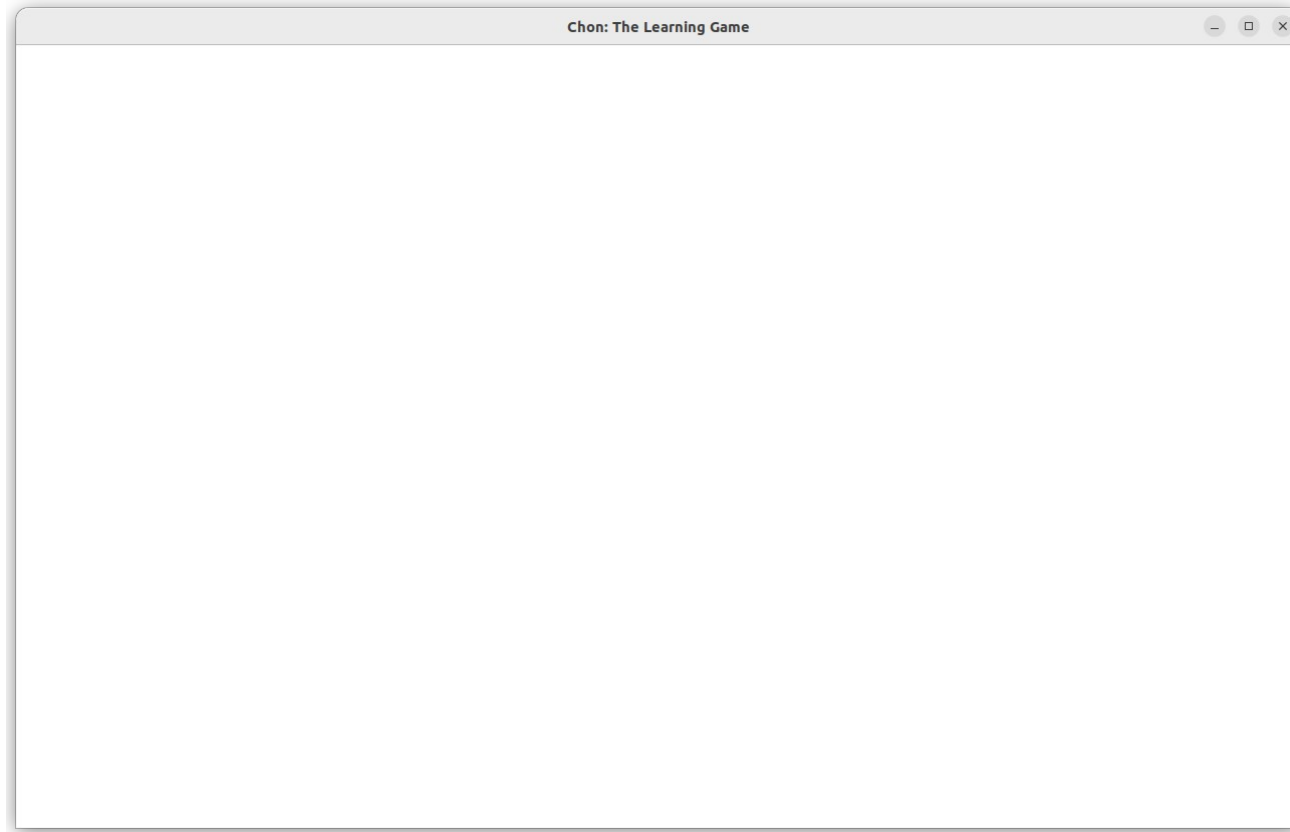


StackPane



StackPane

pane

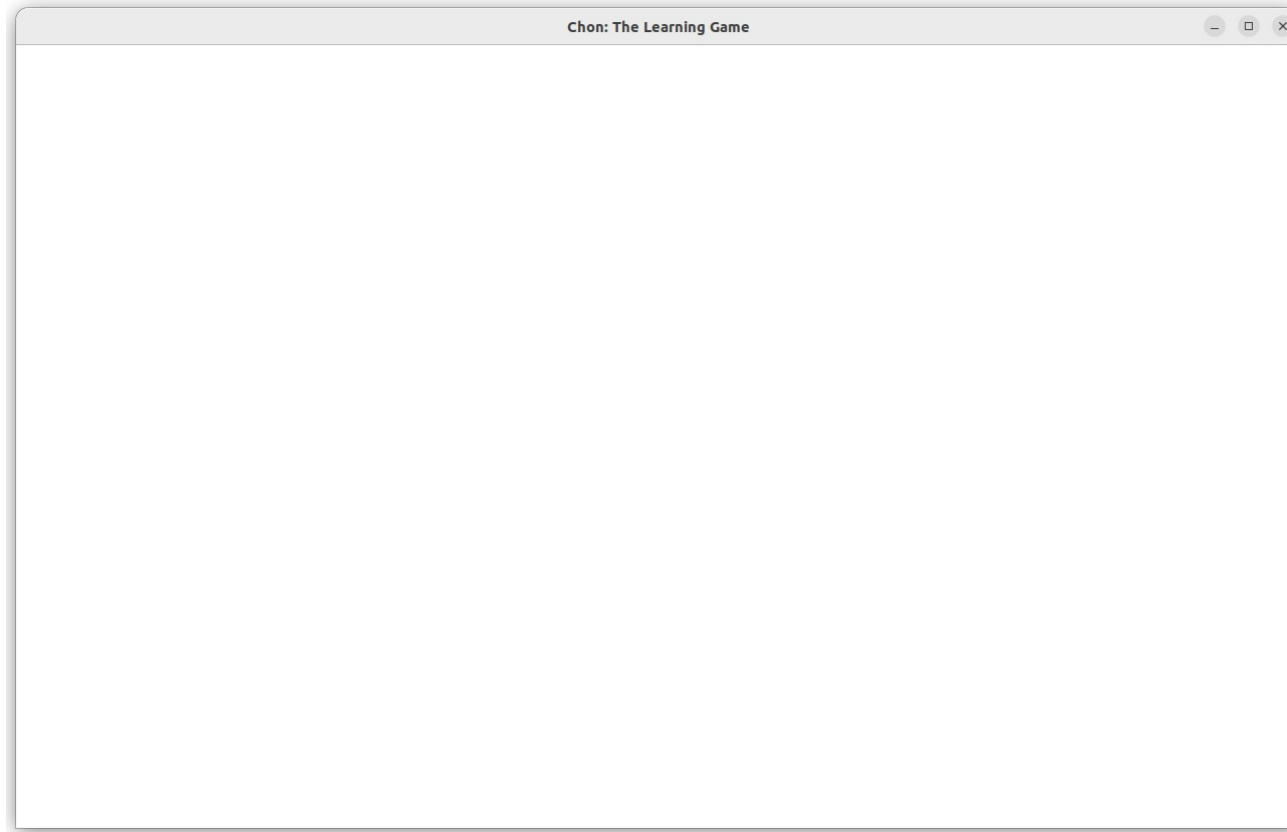


StackPane

pane

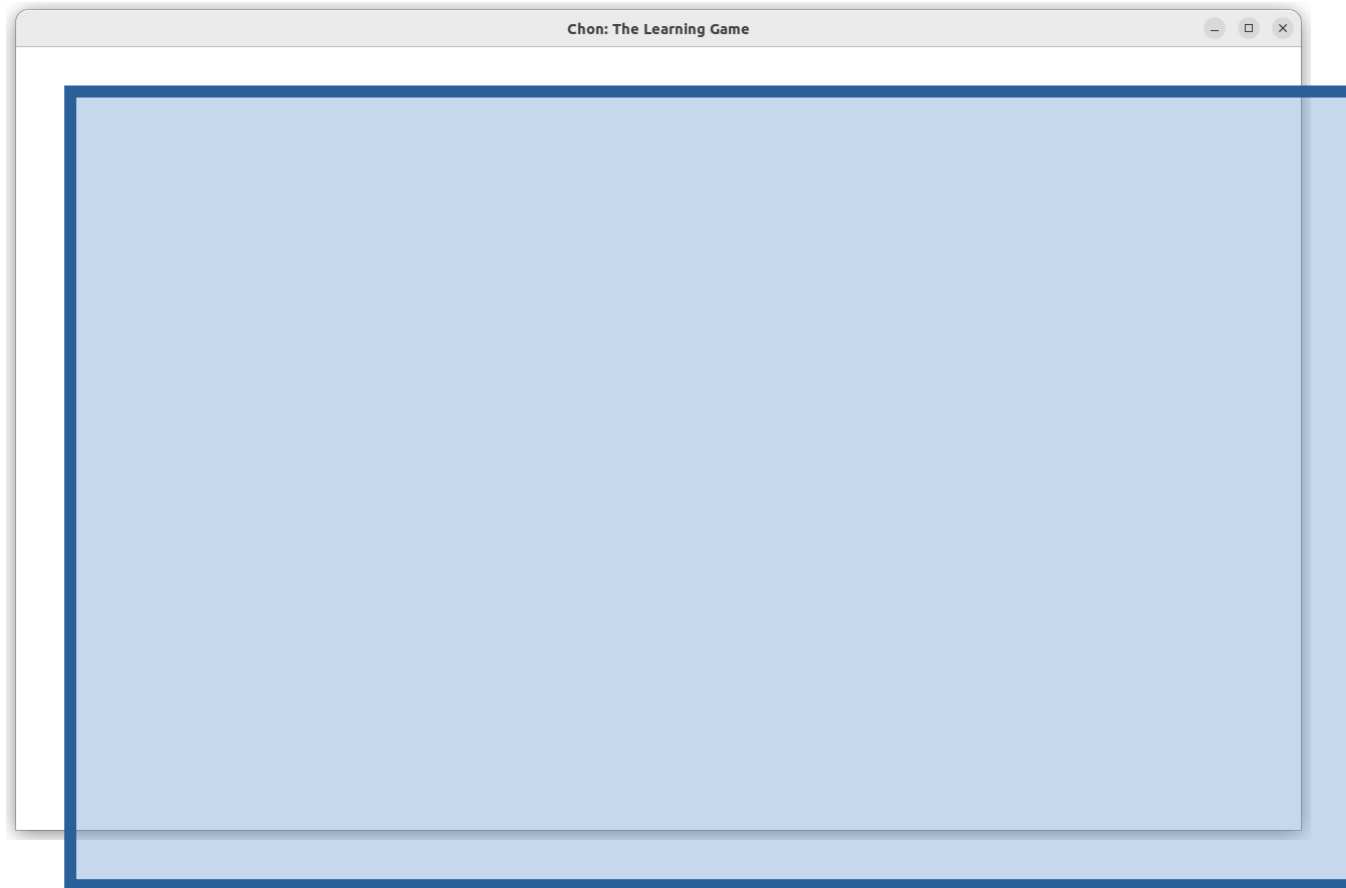


The window
that is
currently
displayed on
the screen.



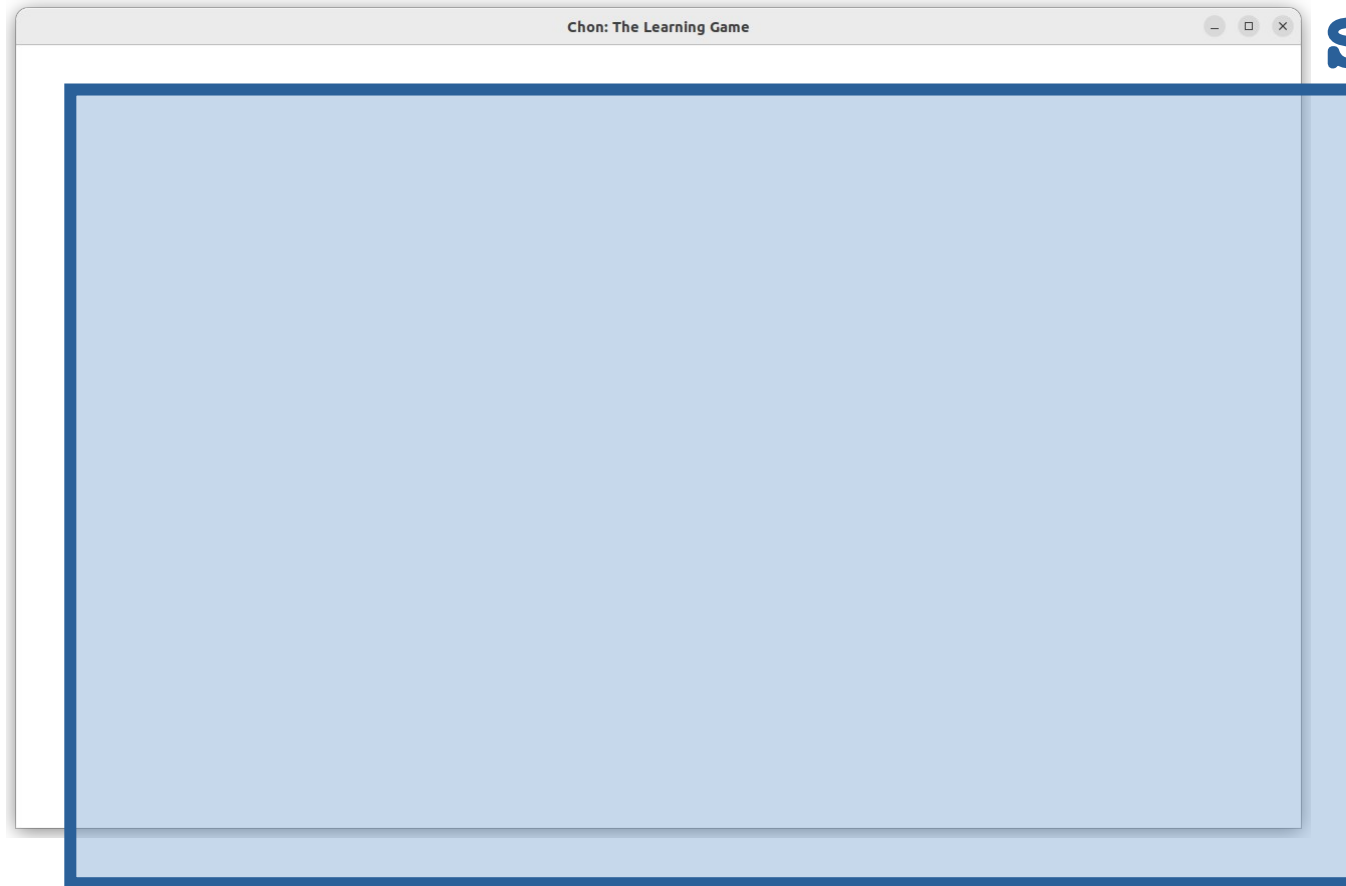
Scene

pane



Scene

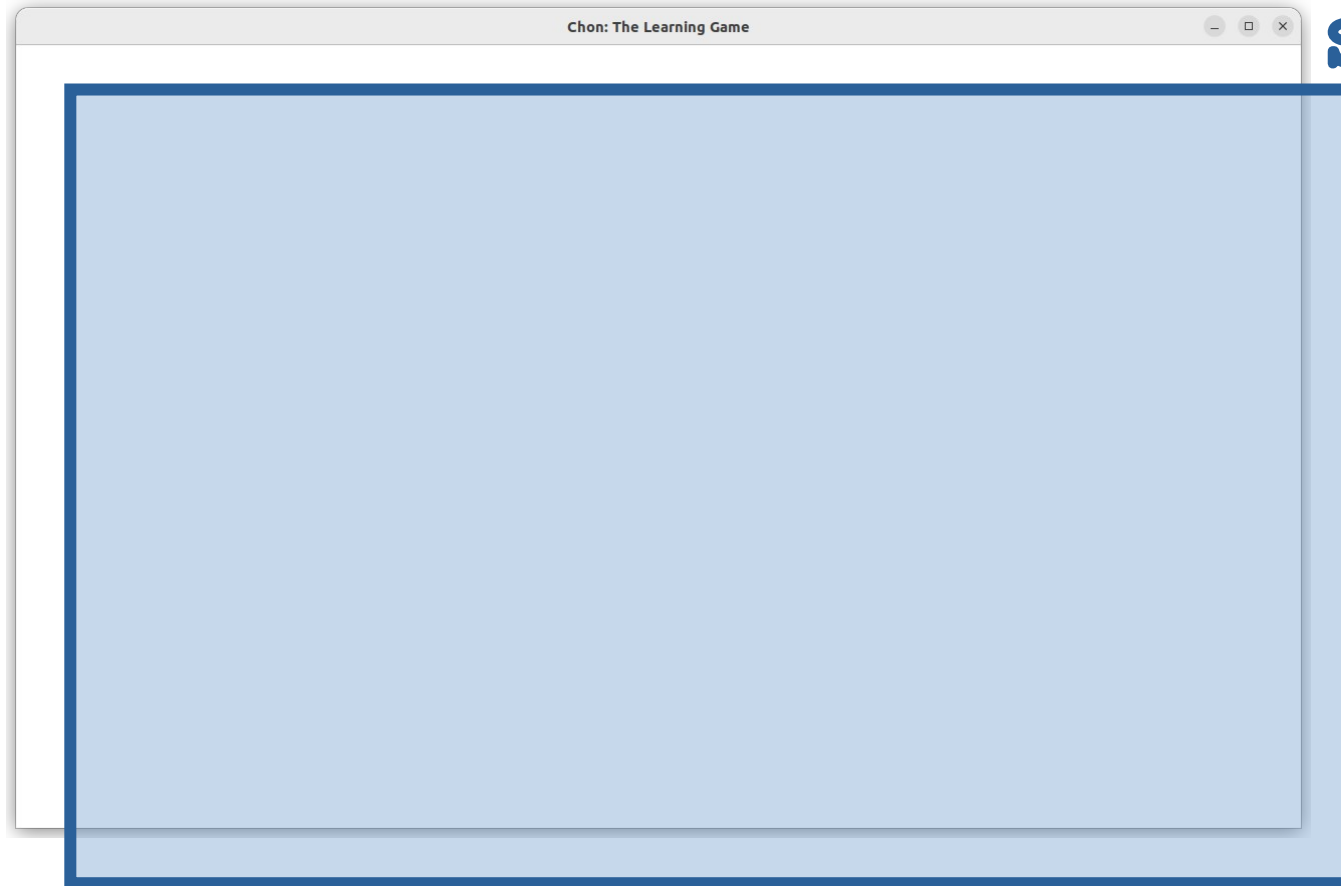
pane



scene

Scene

pane



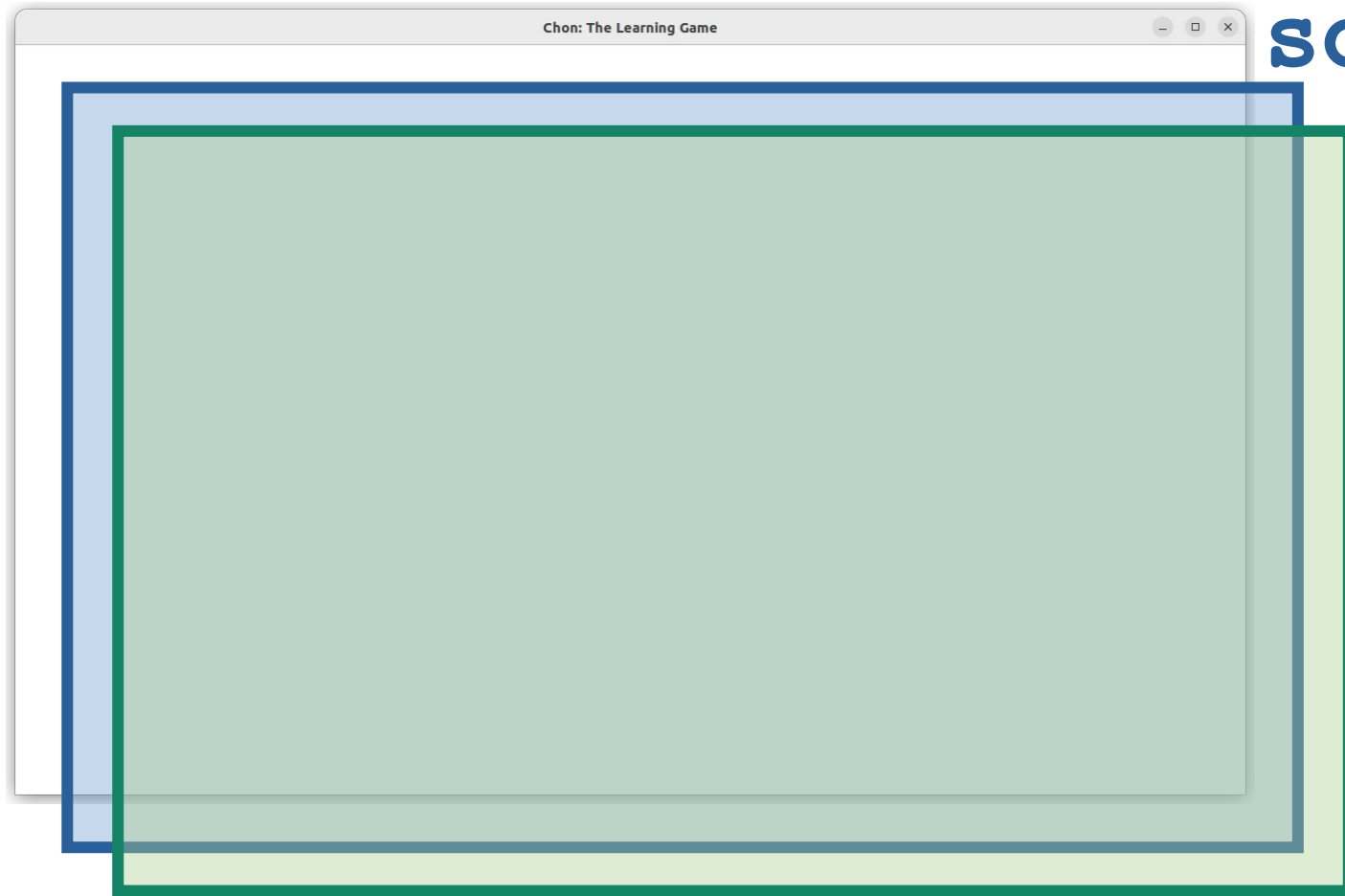
scene



It refers to
the initial
visible
dimensions
of a pane.

Canvas

pane



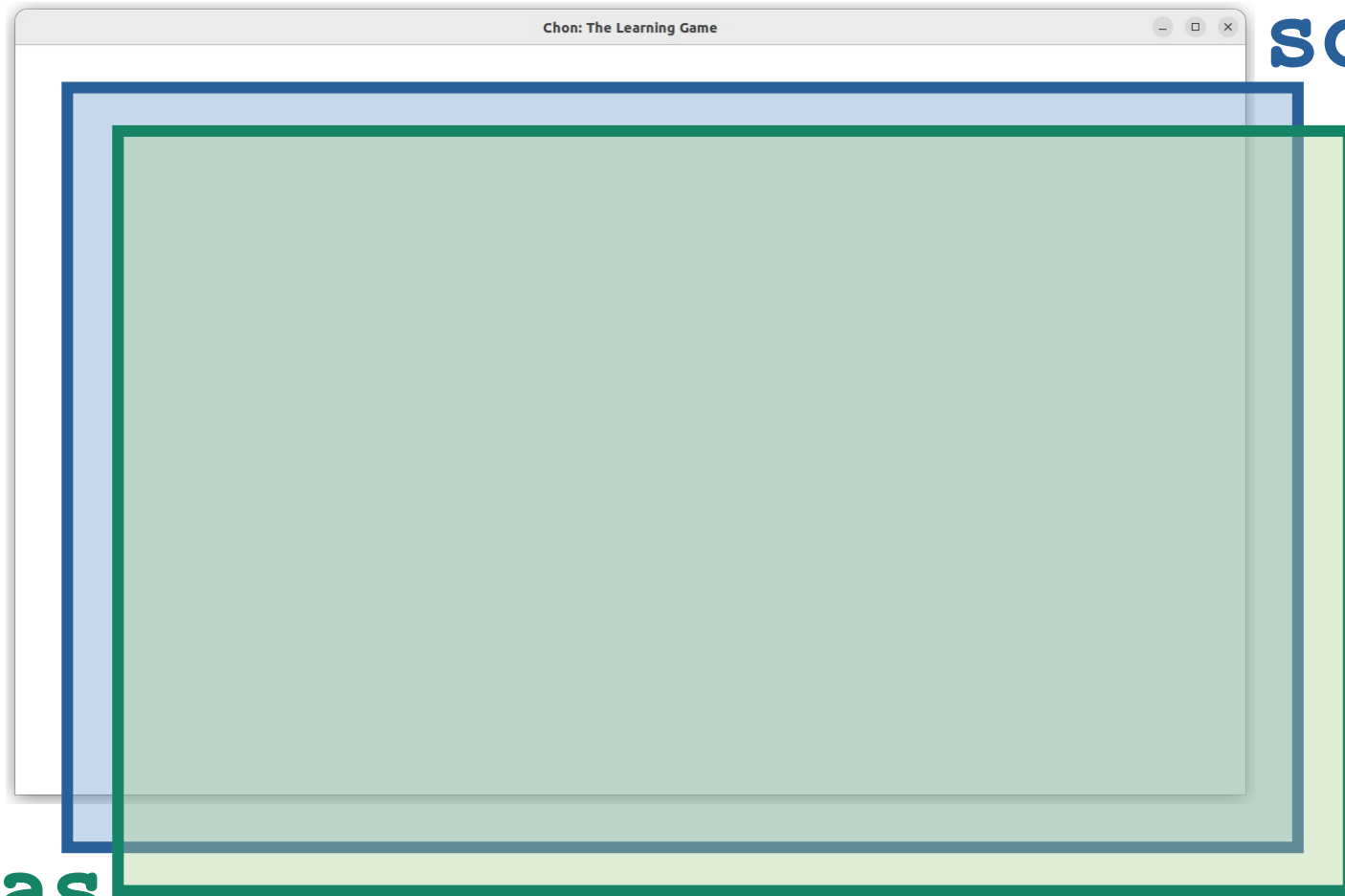
scene

Canvas

pane

scene

canvas



Canvas

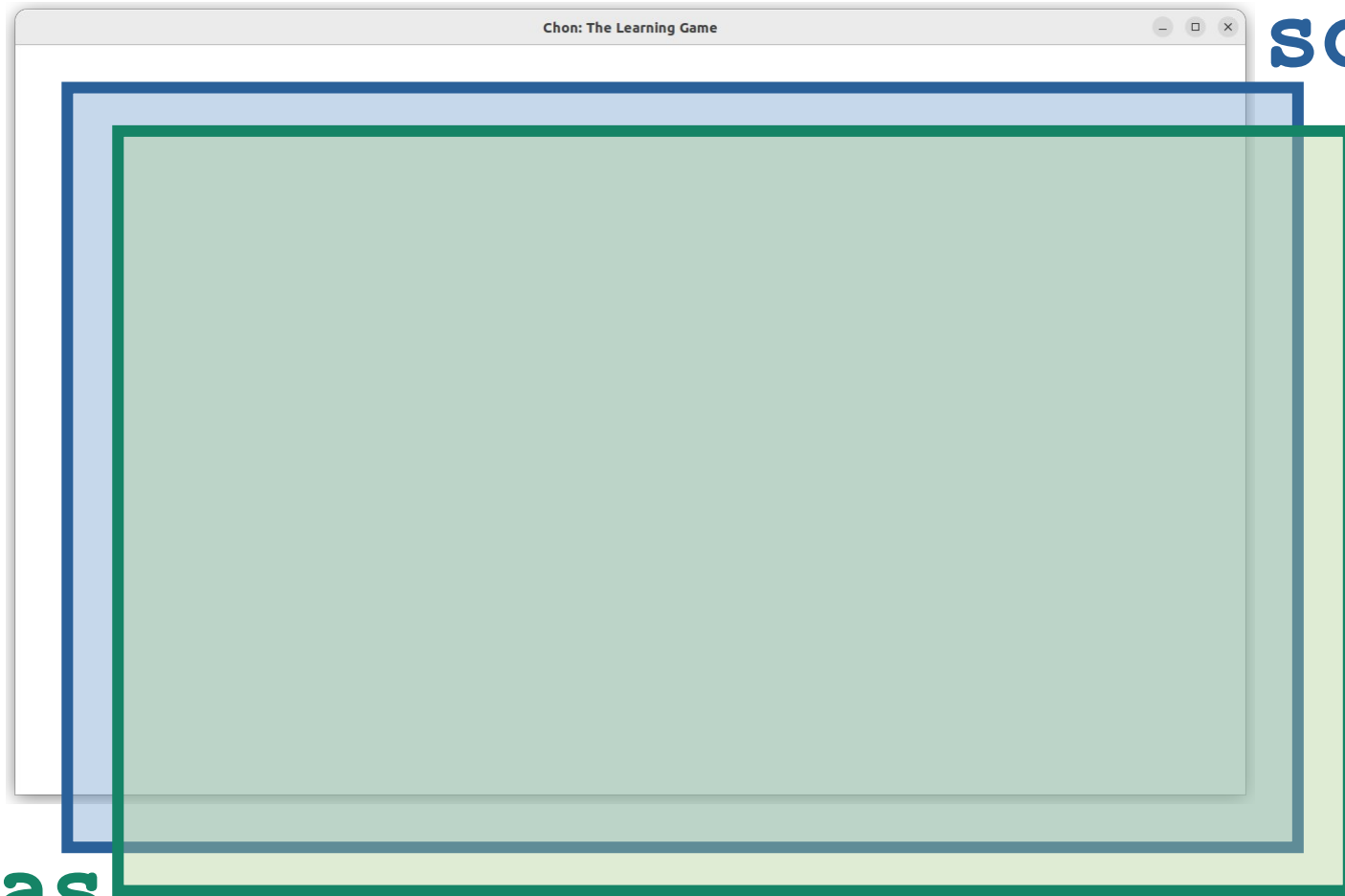
pane

scene

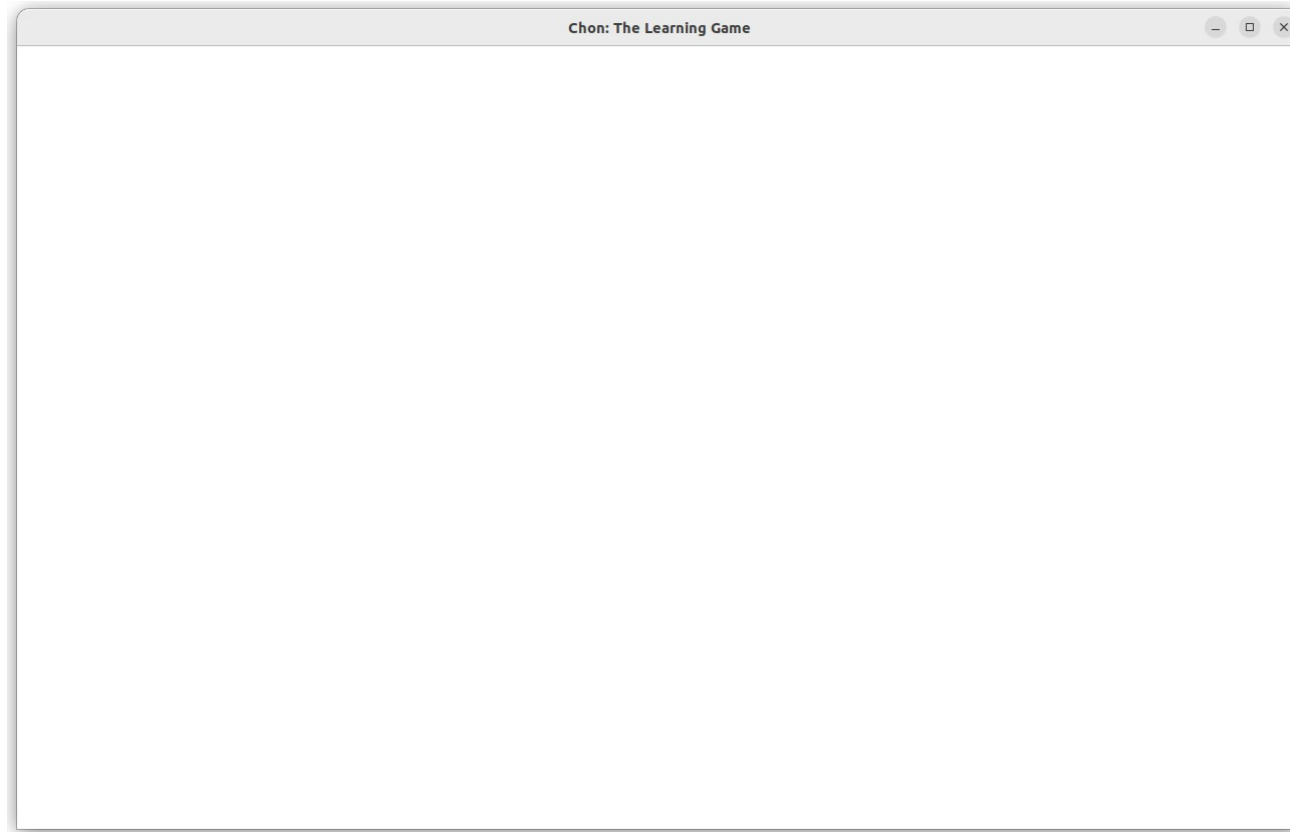
The canvas is
the part of
the screen
where graphics
are displayed
and printed.



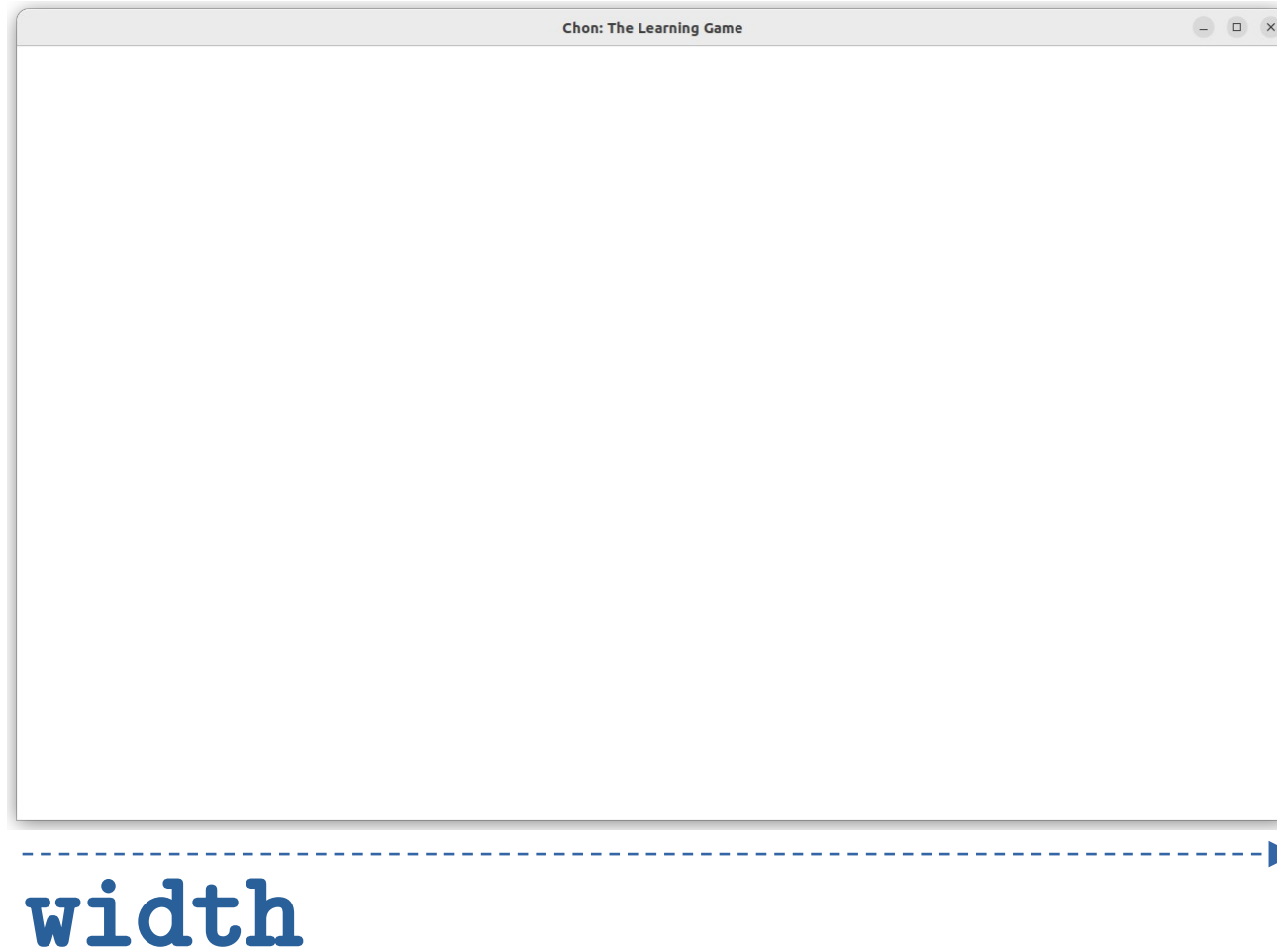
canvas



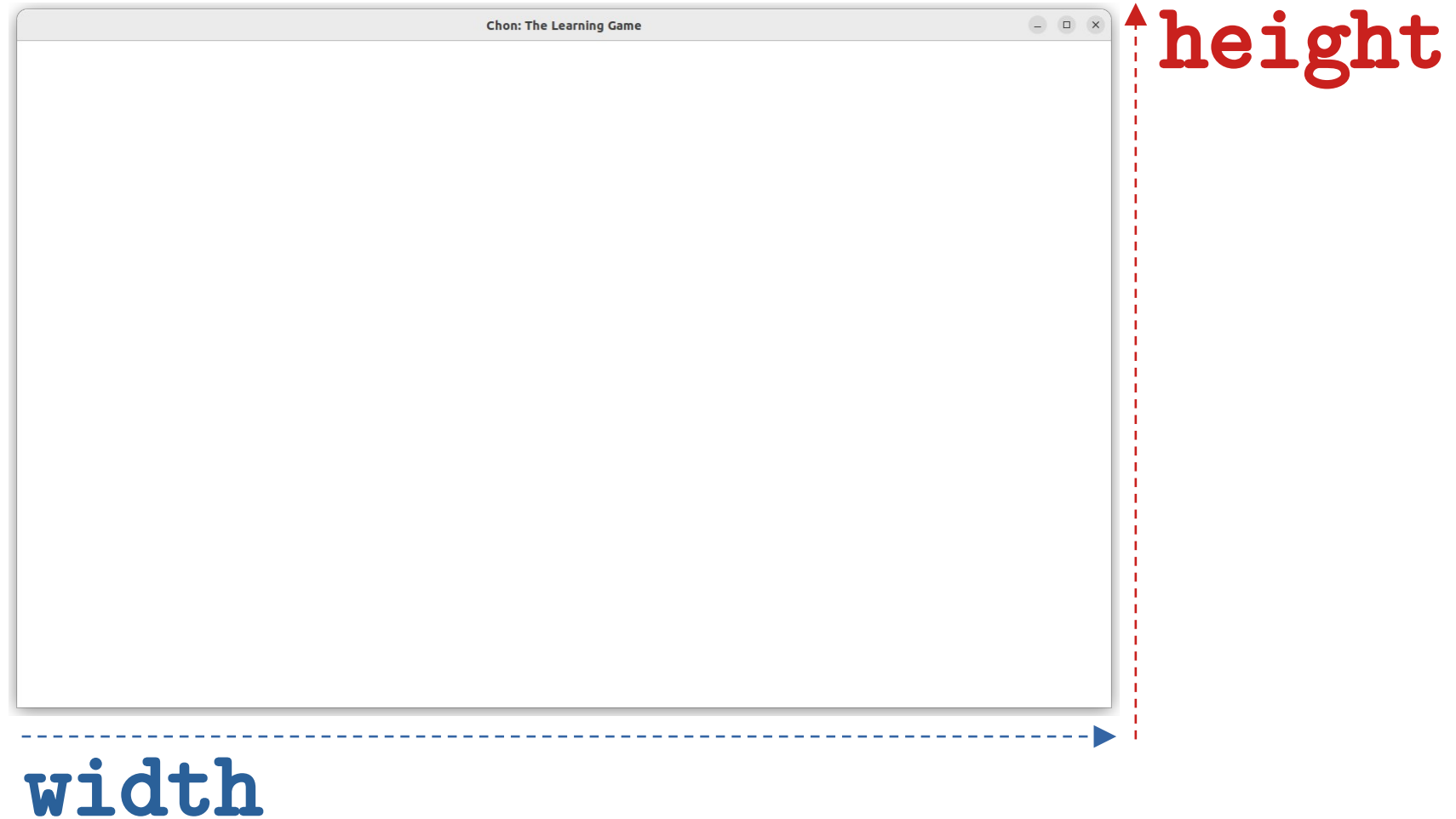
Object's Dimension: Width and Height



Object's Dimension: Width and Height



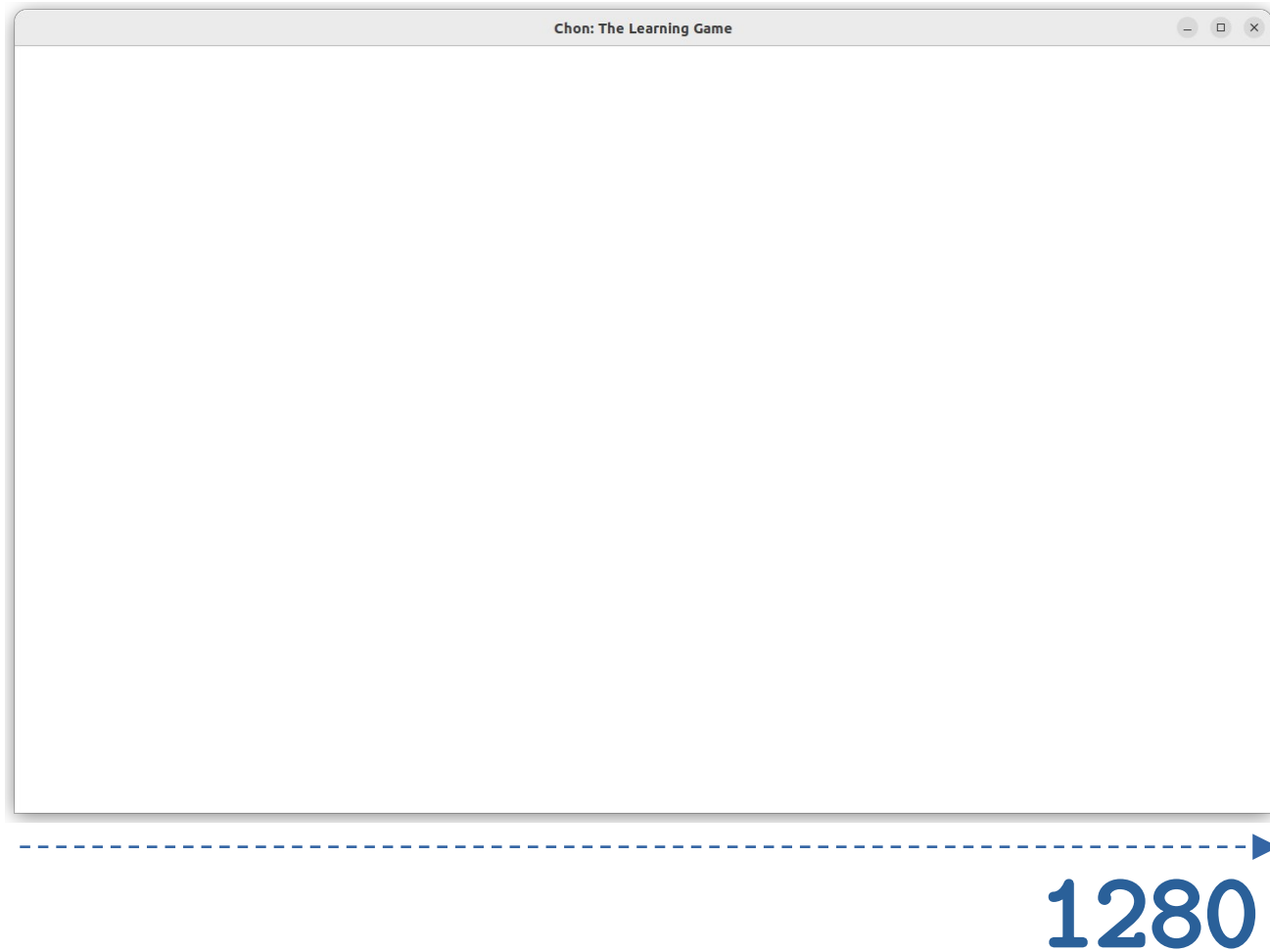
Object's Dimension: Width and Height



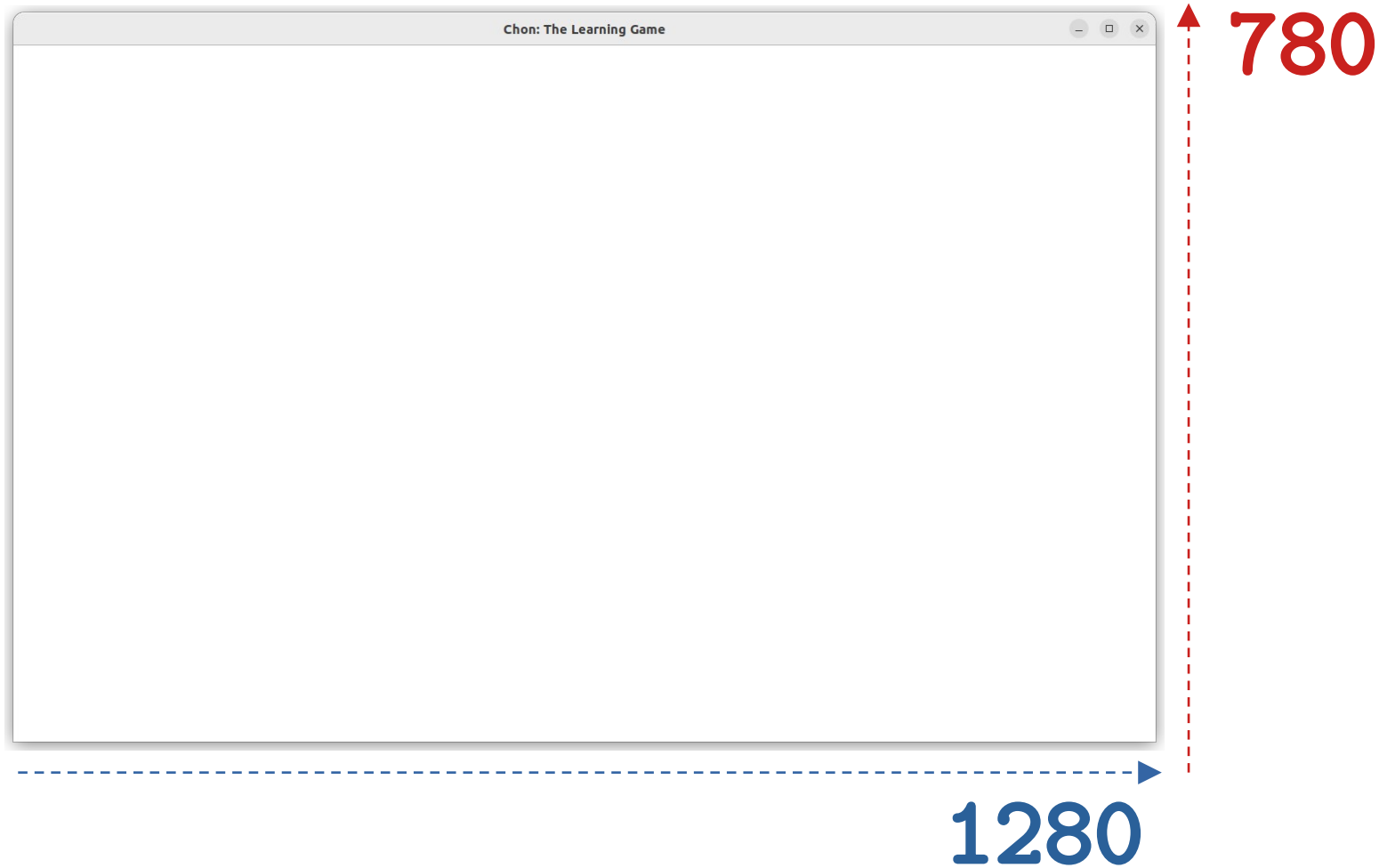
Object's Dimension: Width and Height



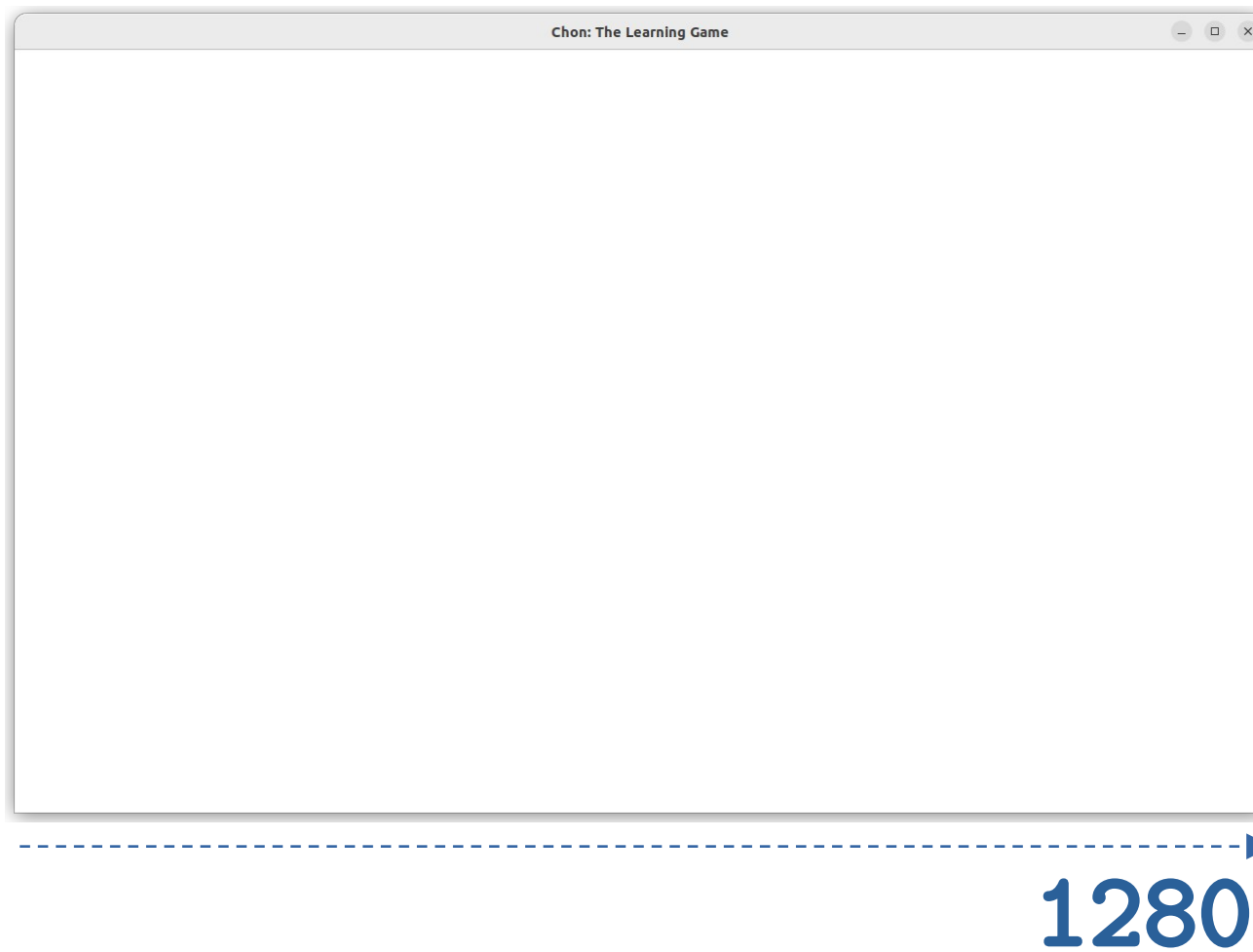
Object's Dimension: Width and Height



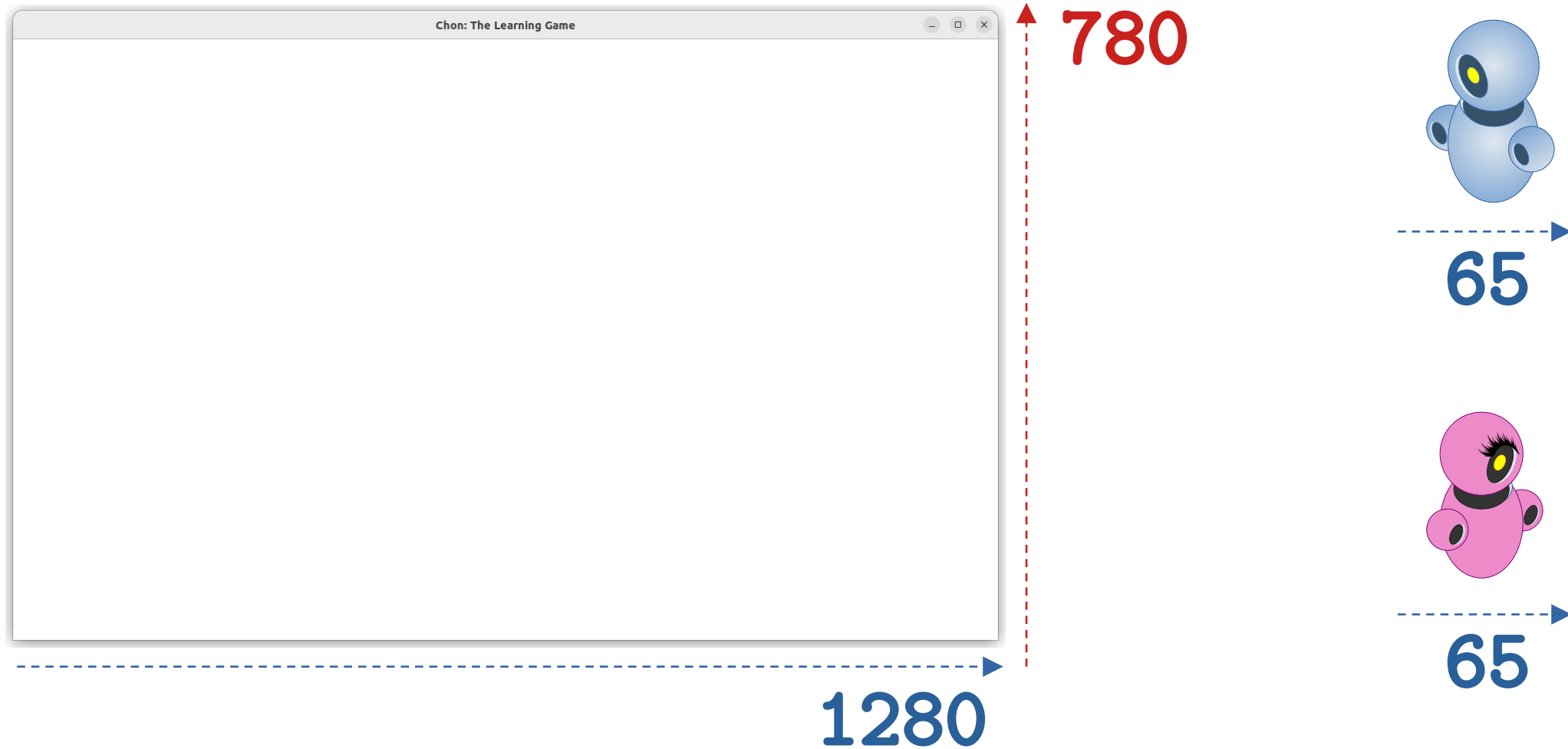
Object's Dimension: Width and Height



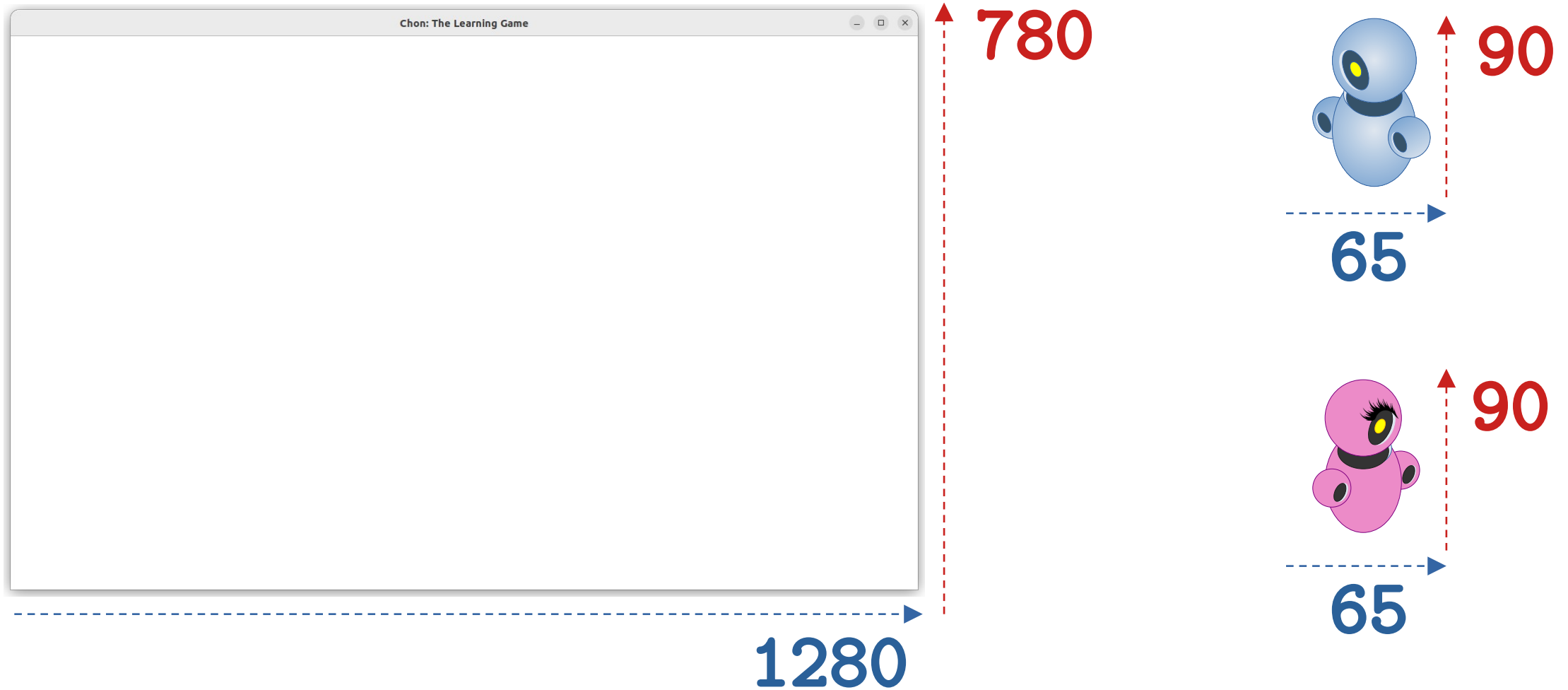
Object's Dimension: Width and Height



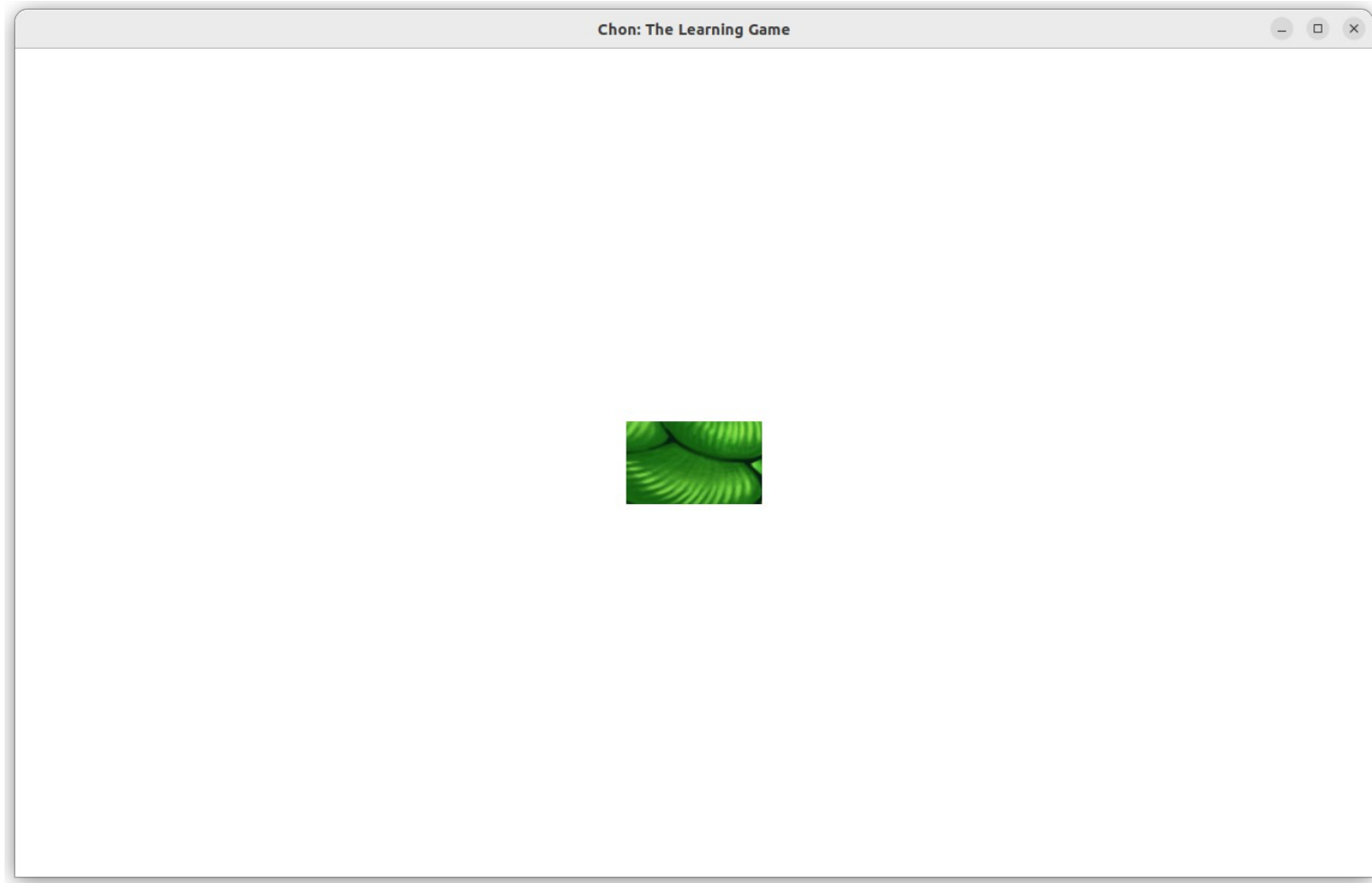
Object's Dimension: Width and Height



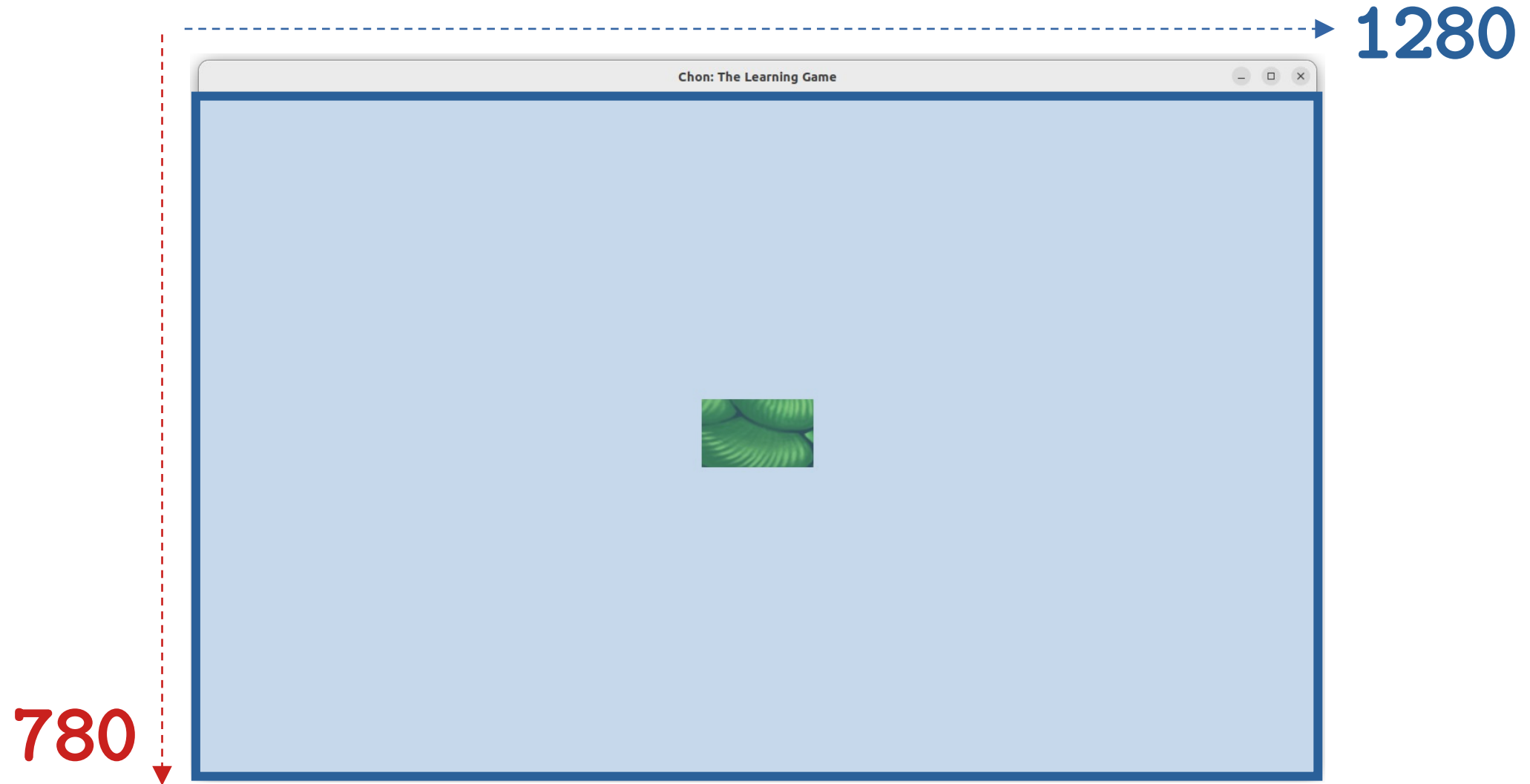
Object's Dimension: Width and Height



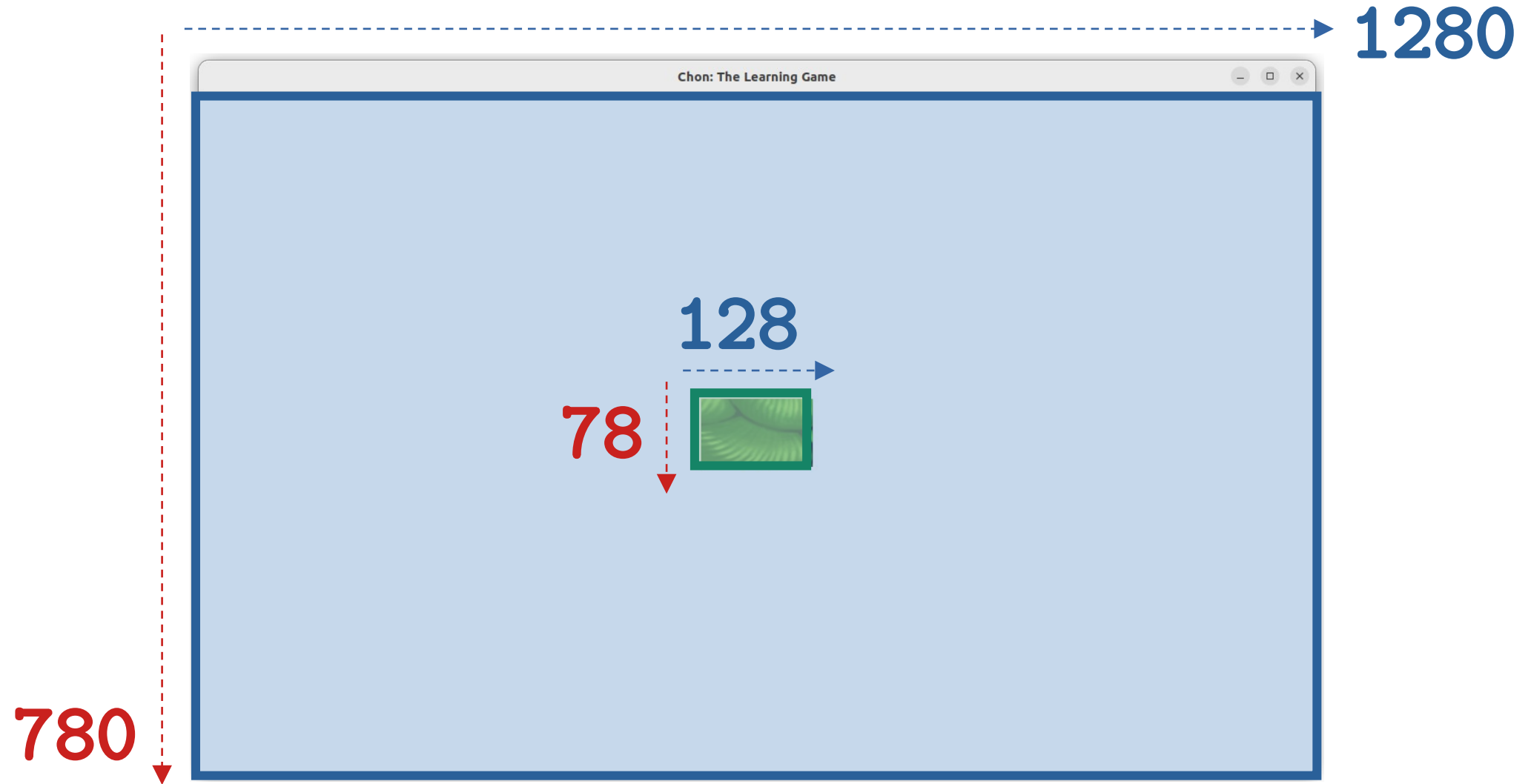
Canvas Example



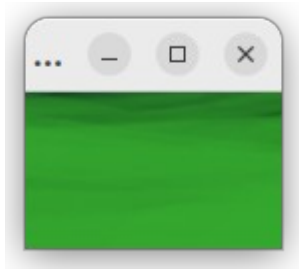
Canvas Example



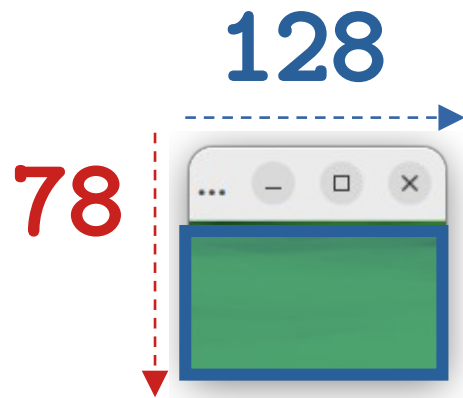
Canvas Example



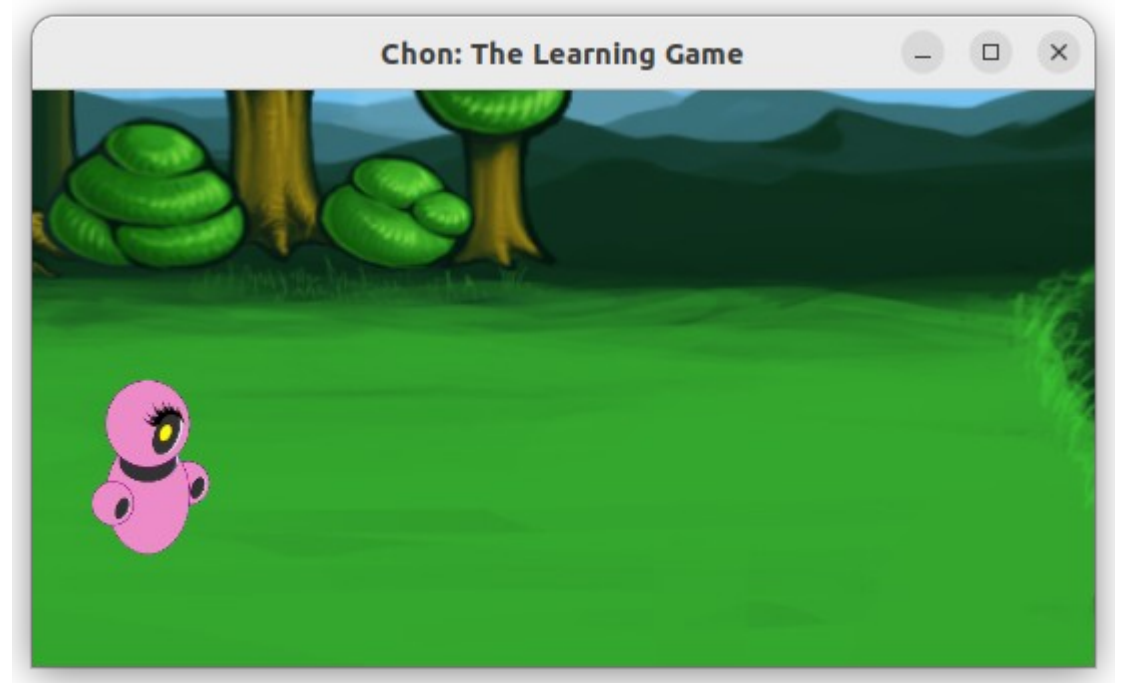
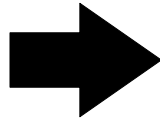
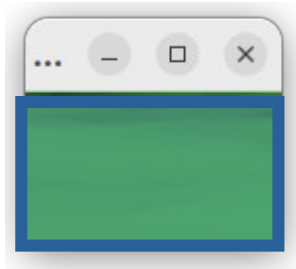
Scene Example



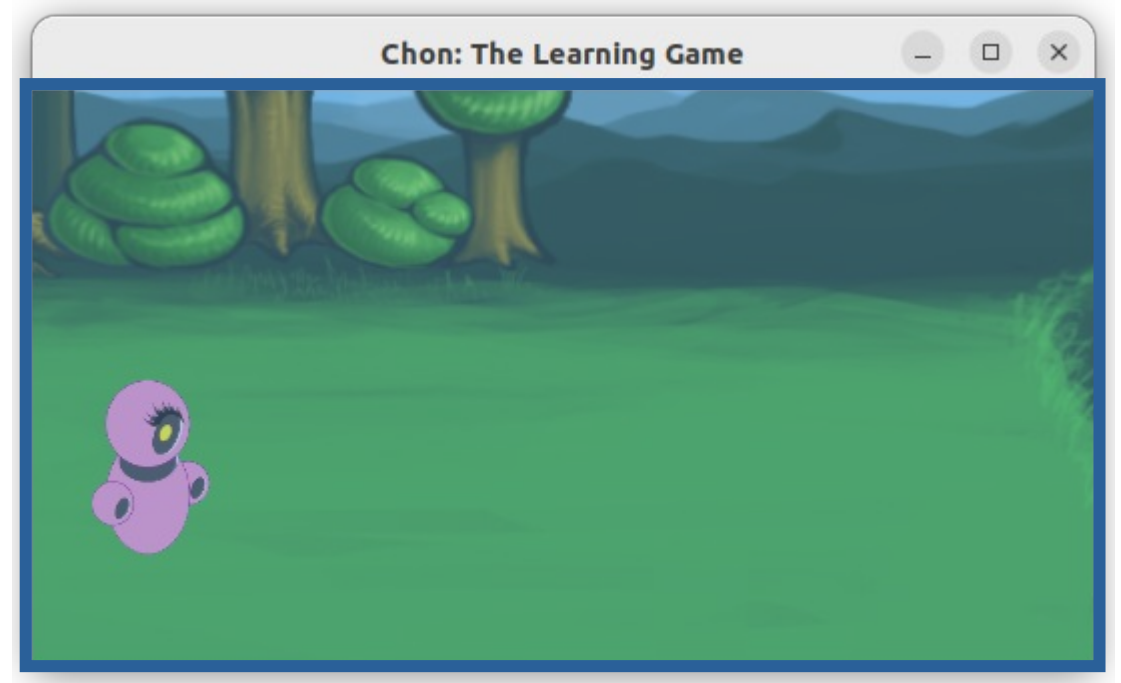
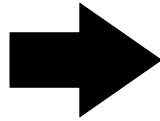
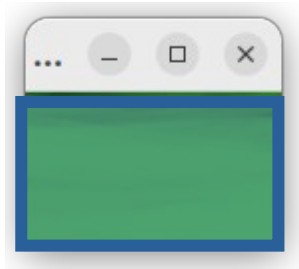
Scene Example



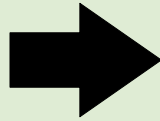
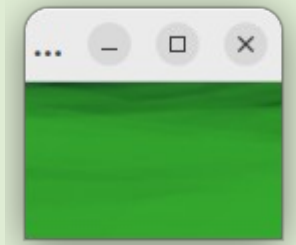
Scene Example



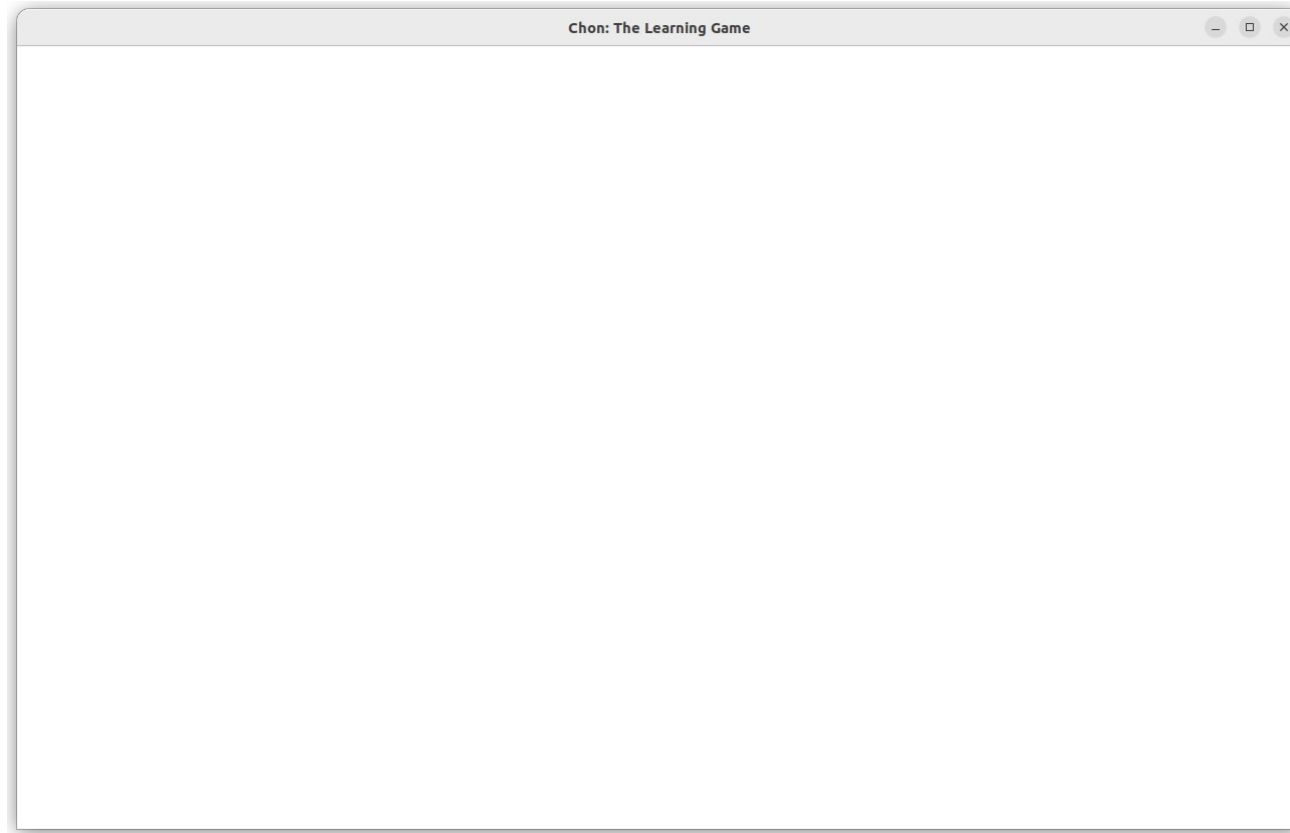
Scene Example



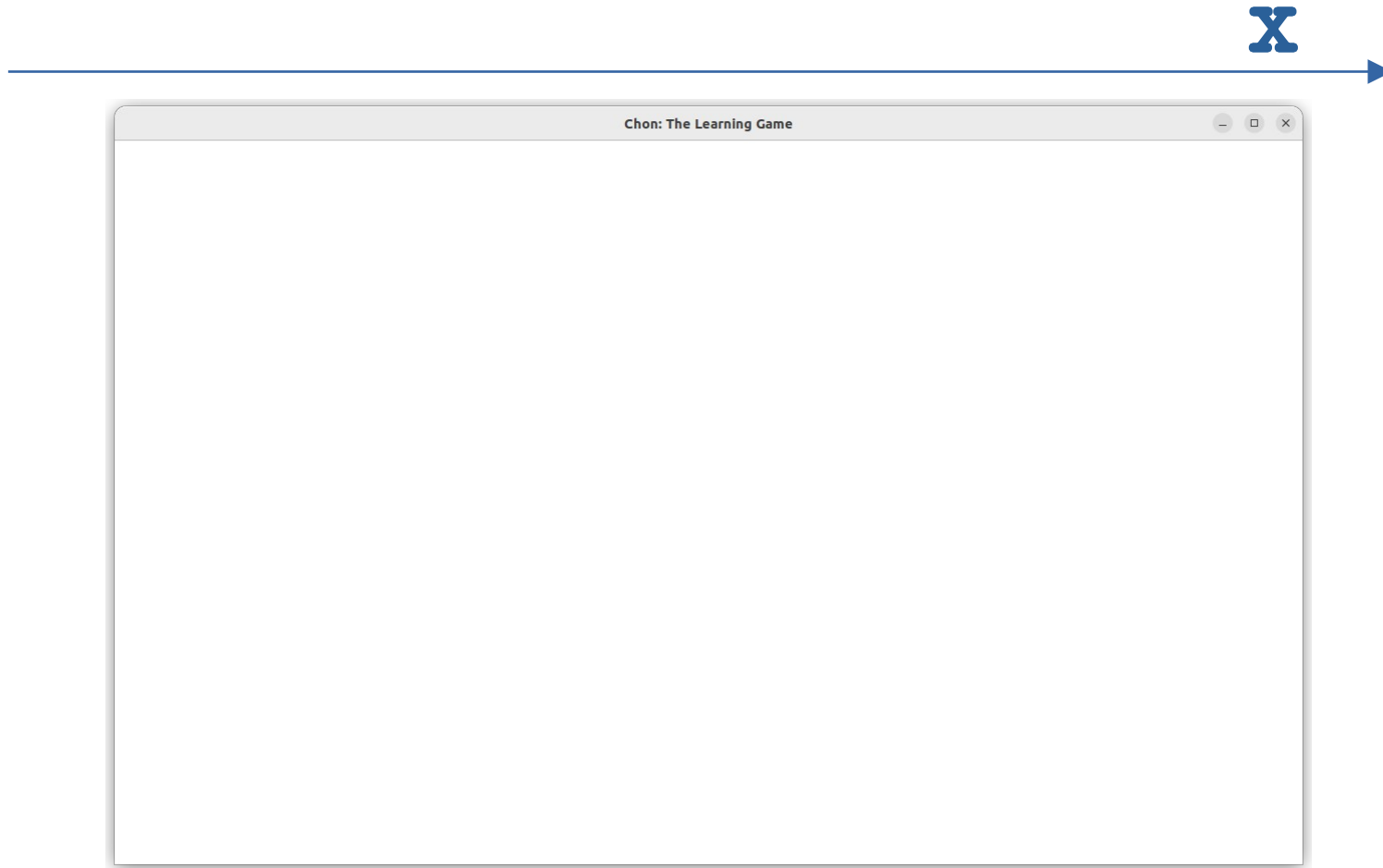
Scene Example



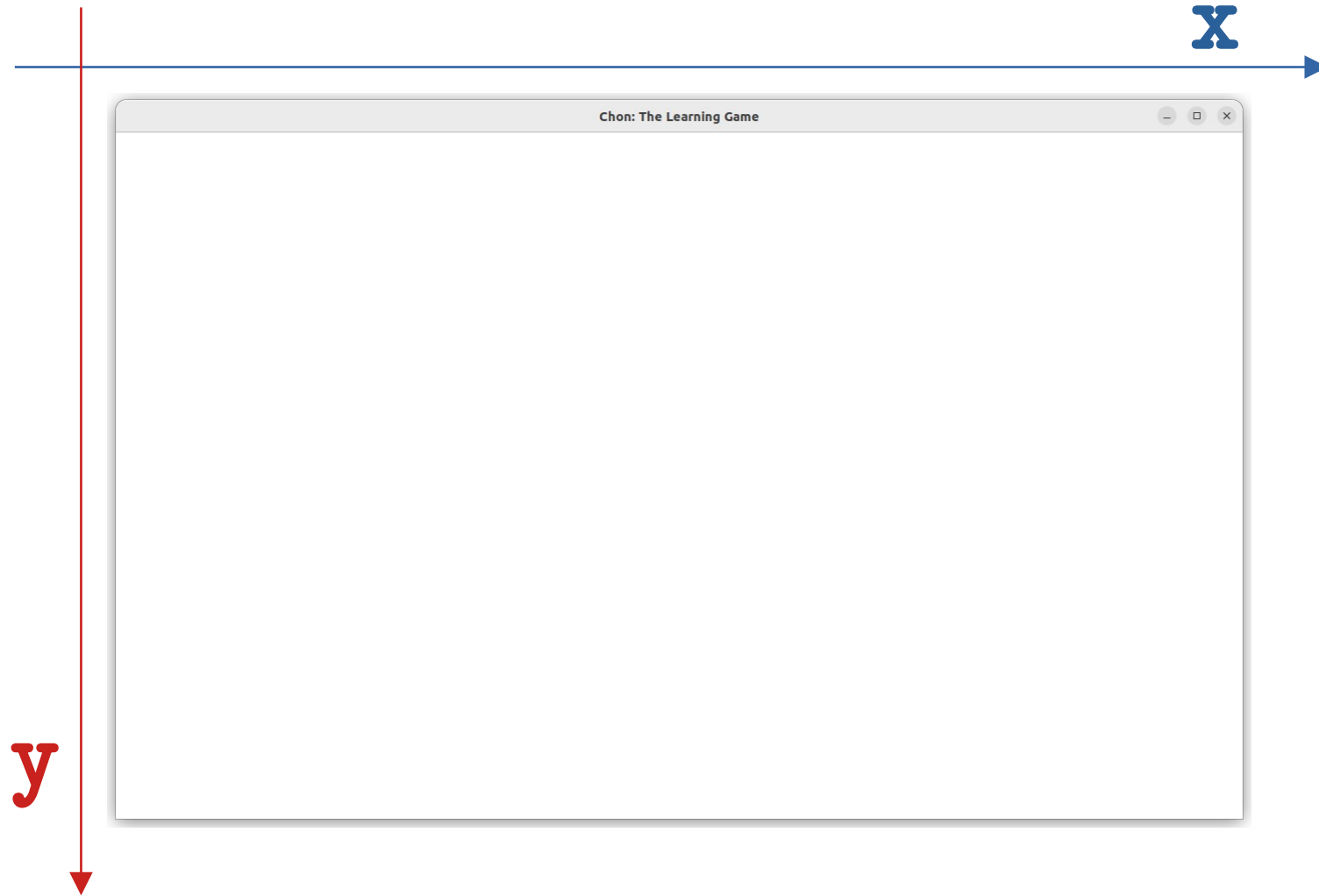
Positioning System



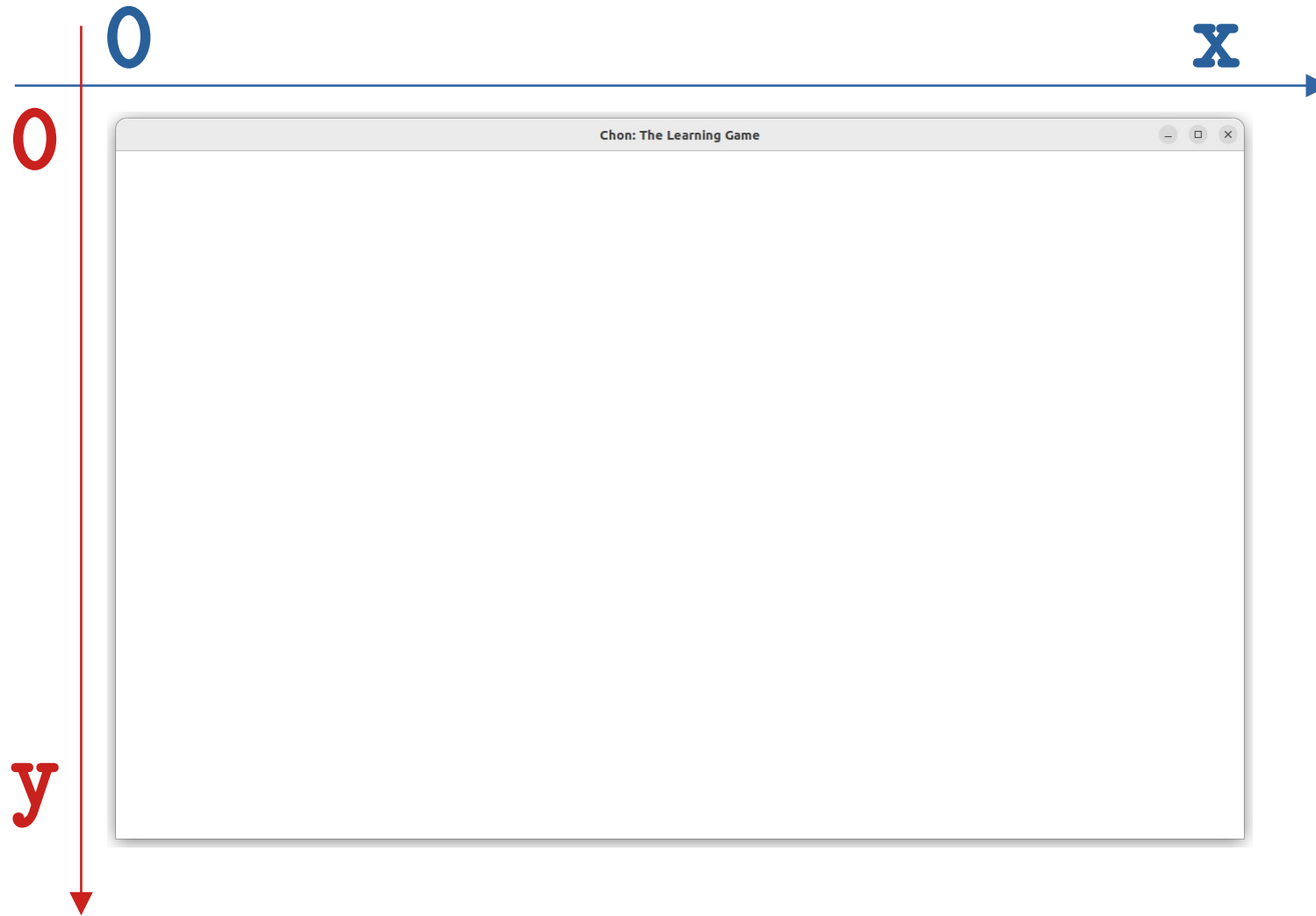
Positioning System



Positioning System



Positioning System



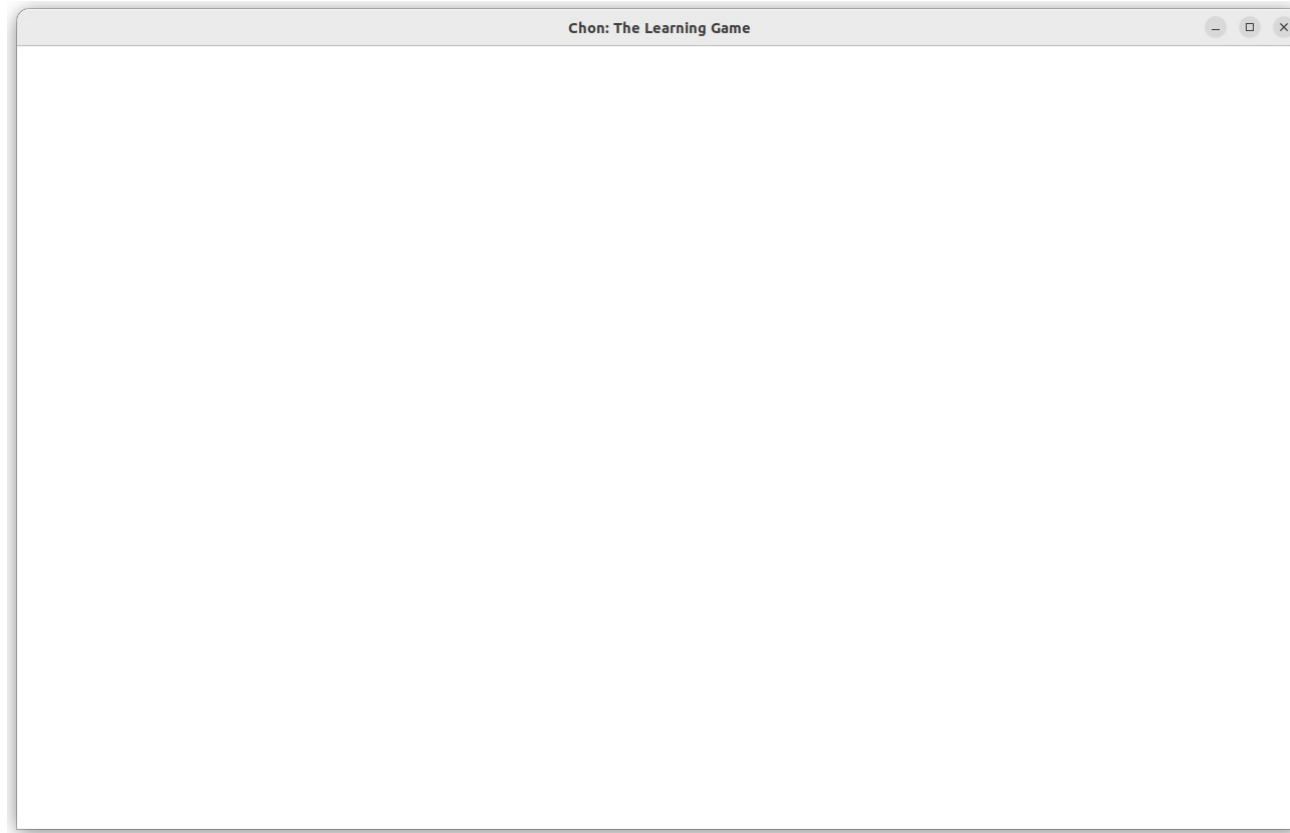
Positioning System



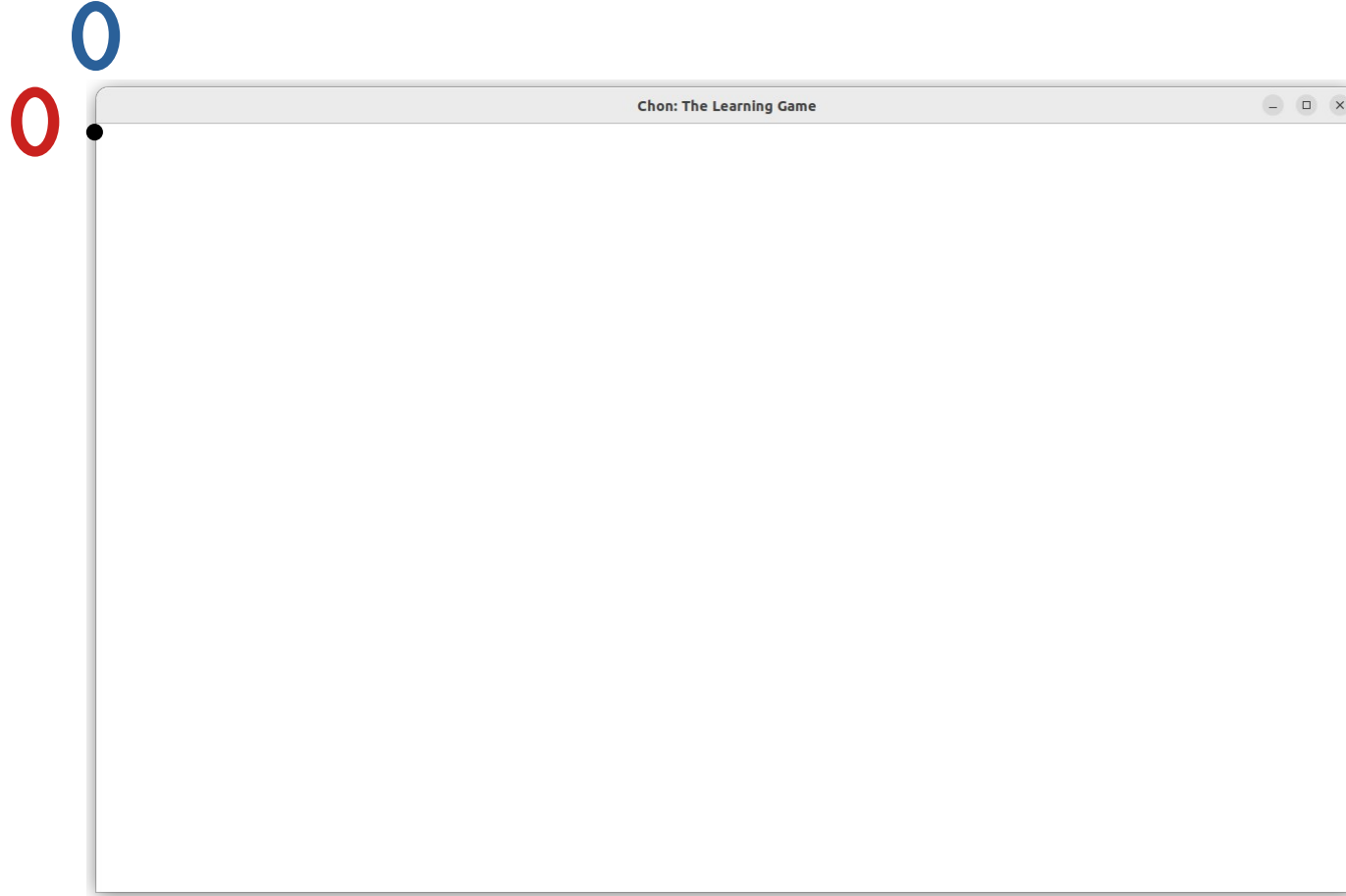
Positioning System



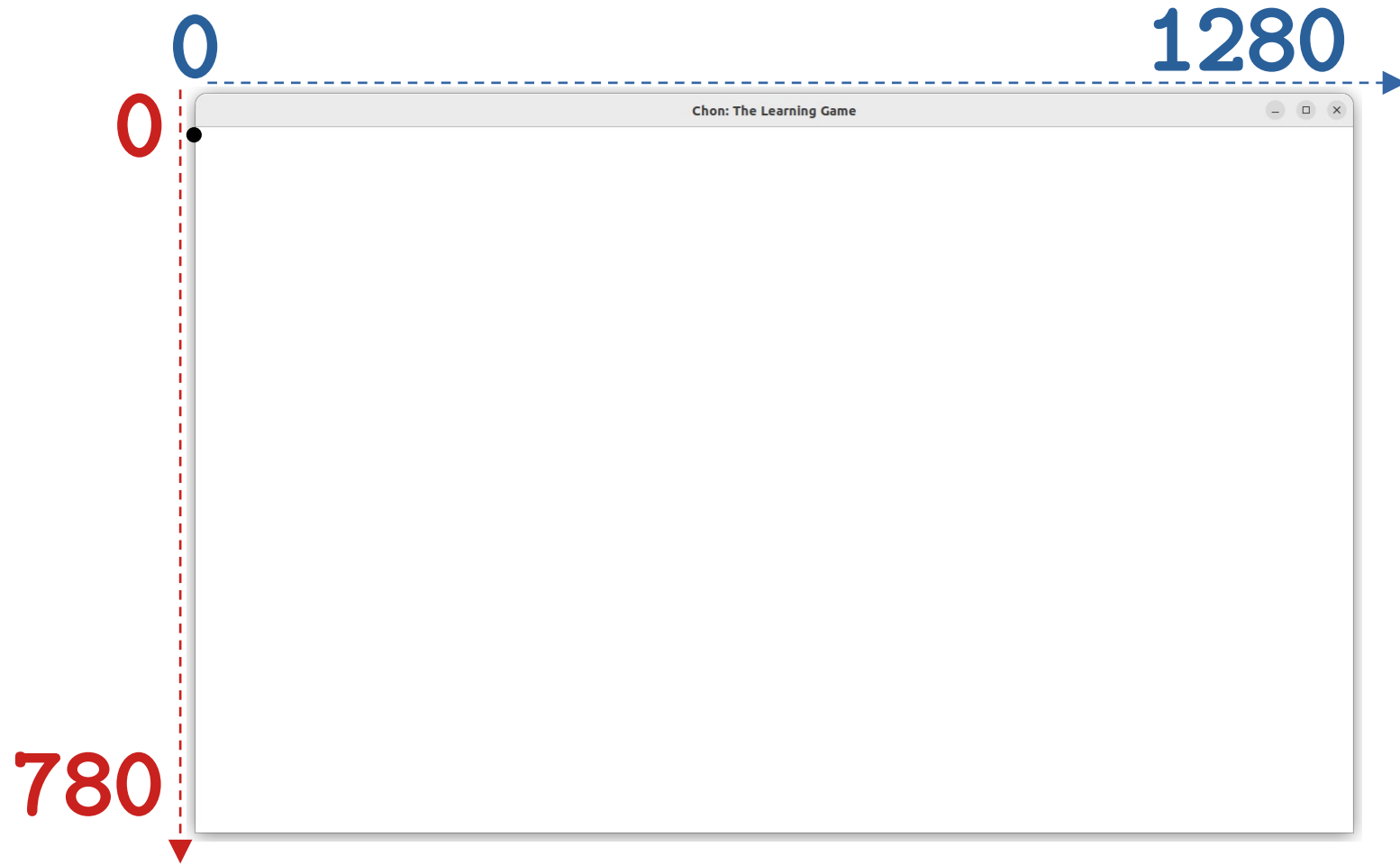
Drawing the Background



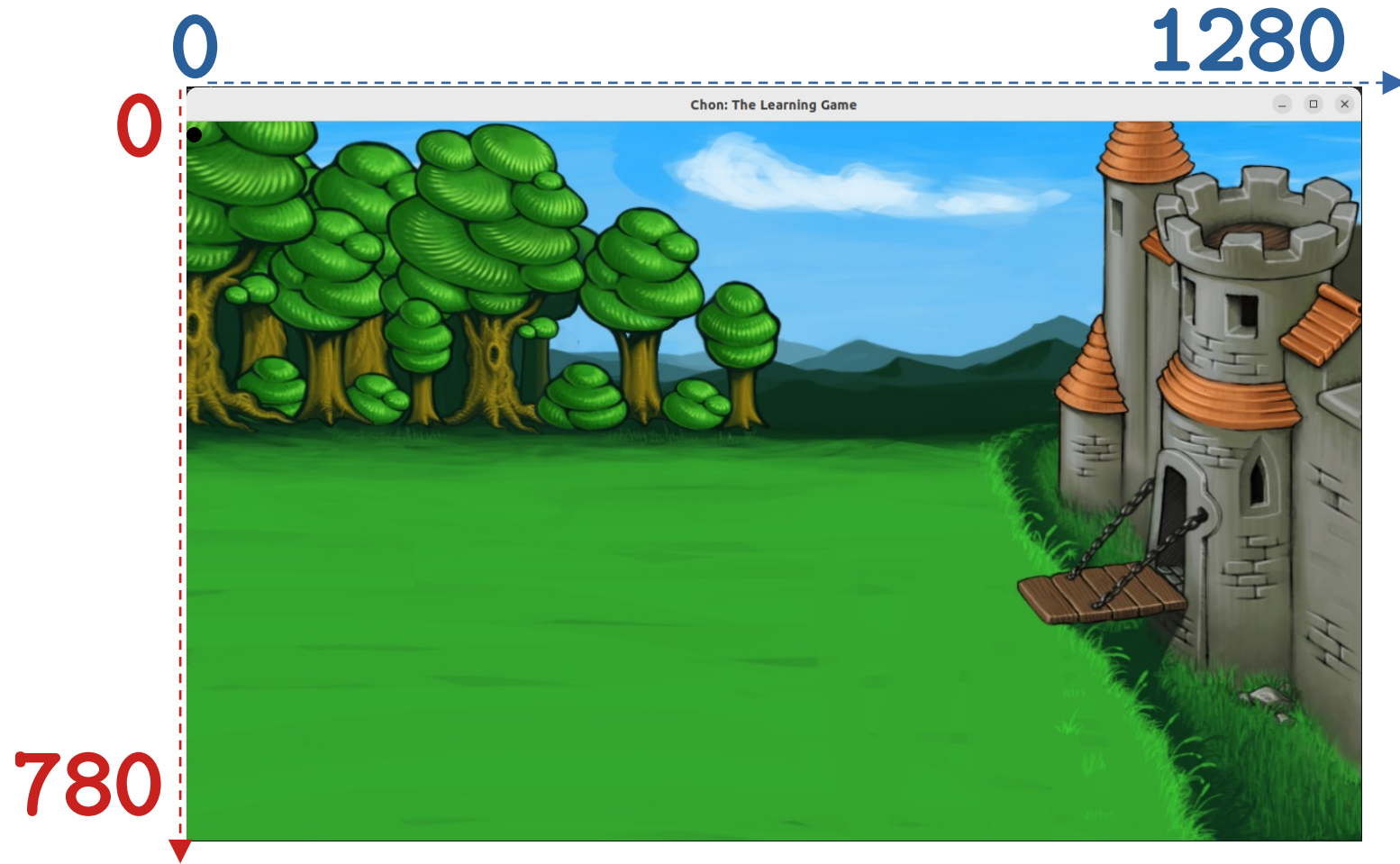
Drawing the Background



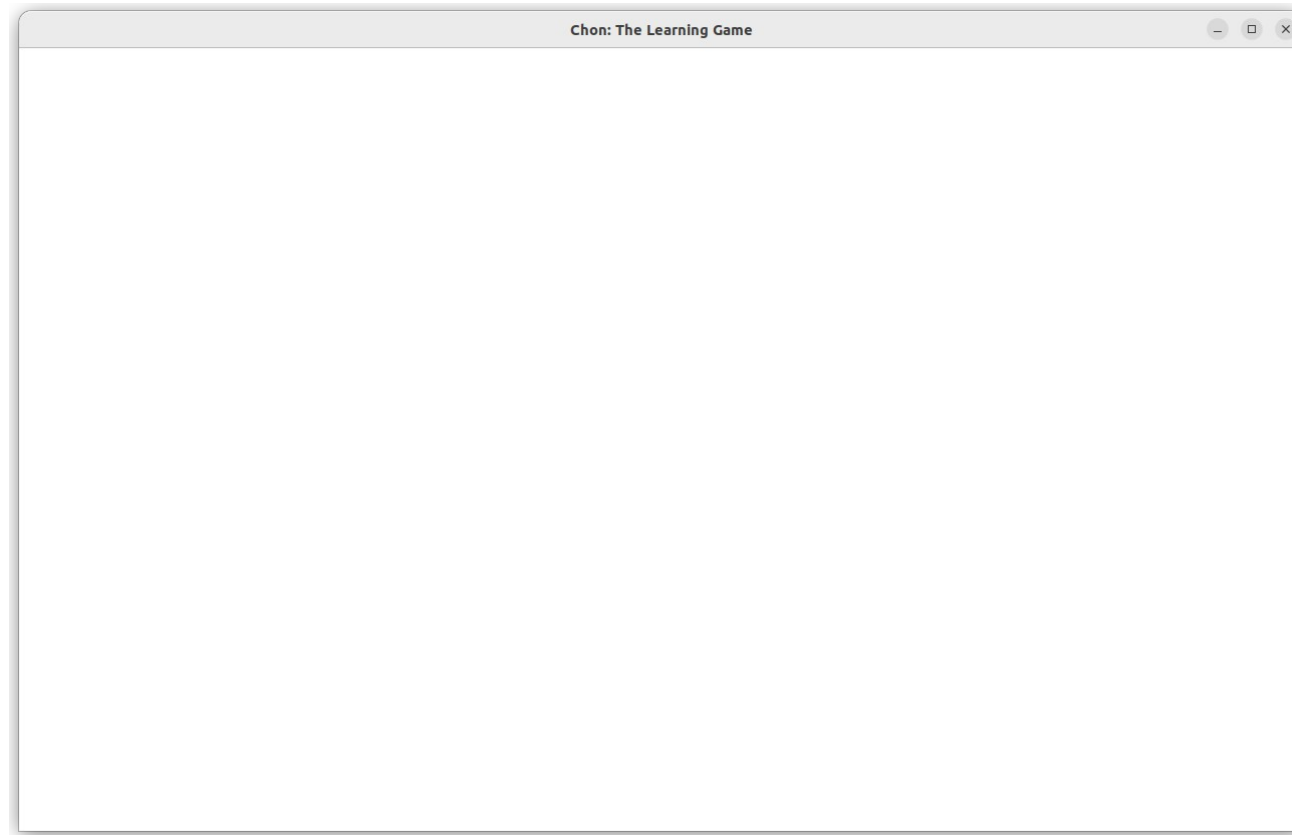
Drawing the Background



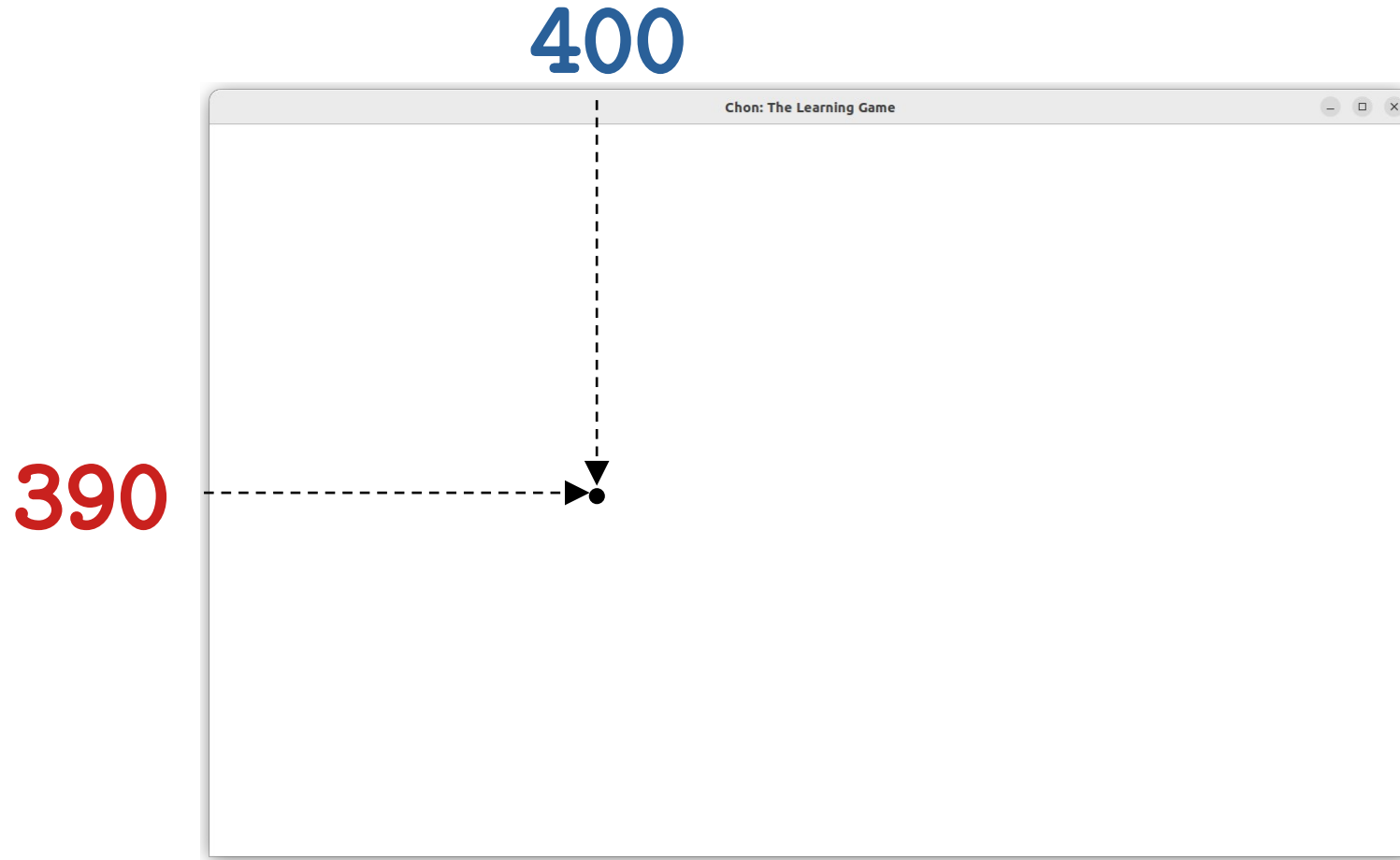
Drawing the Background



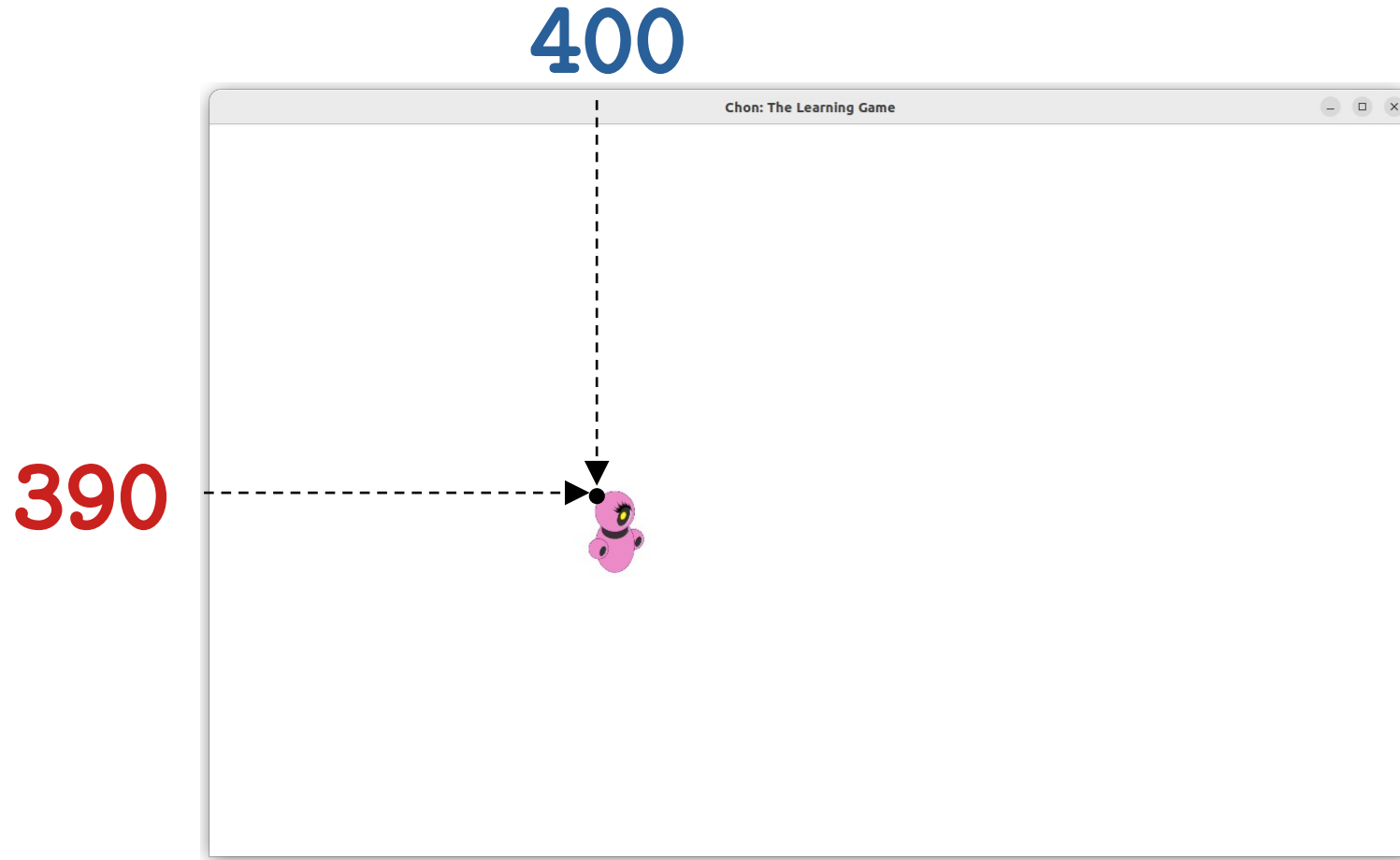
Drawing the Characters



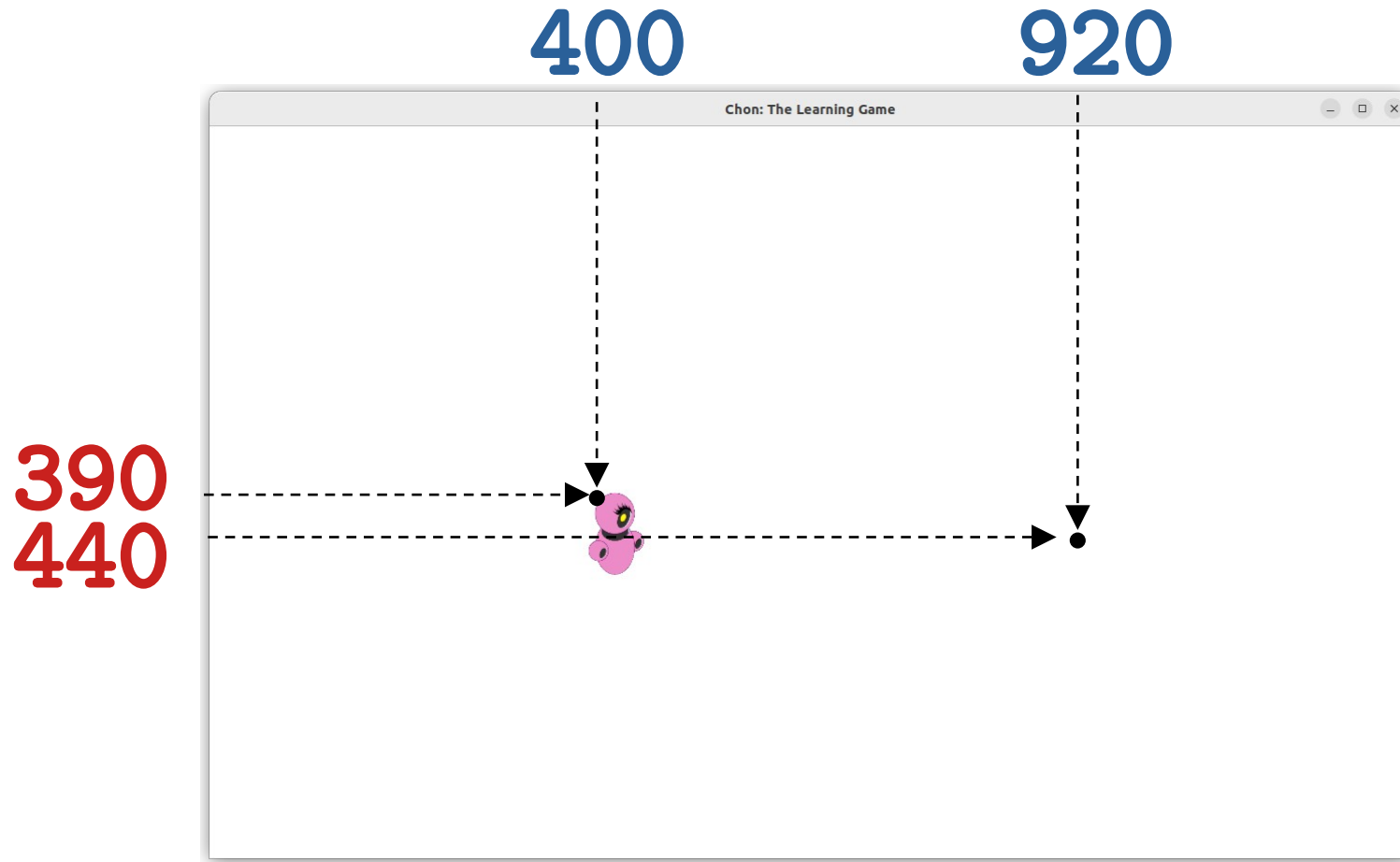
Drawing the Characters



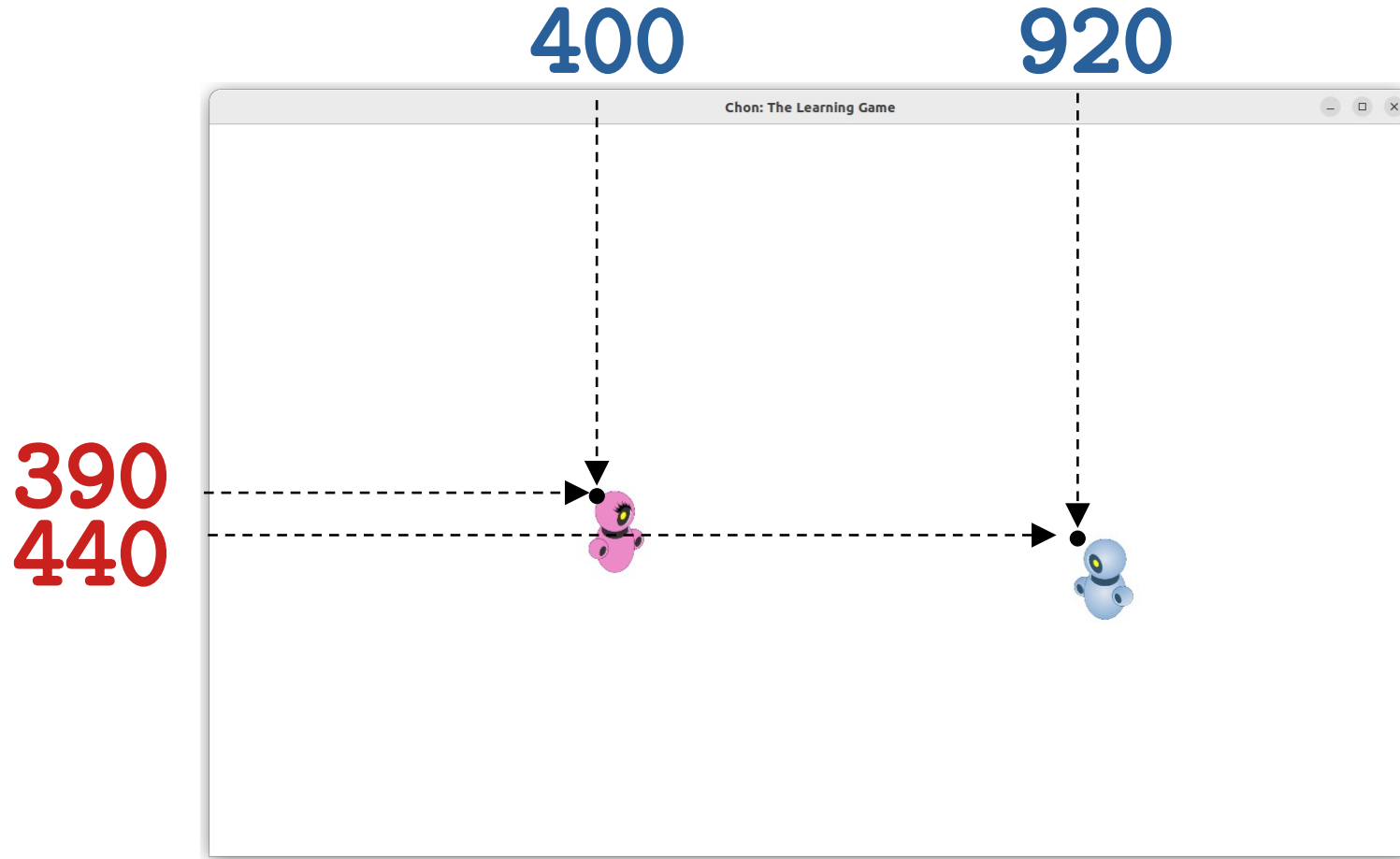
Drawing the Characters



Drawing the Characters



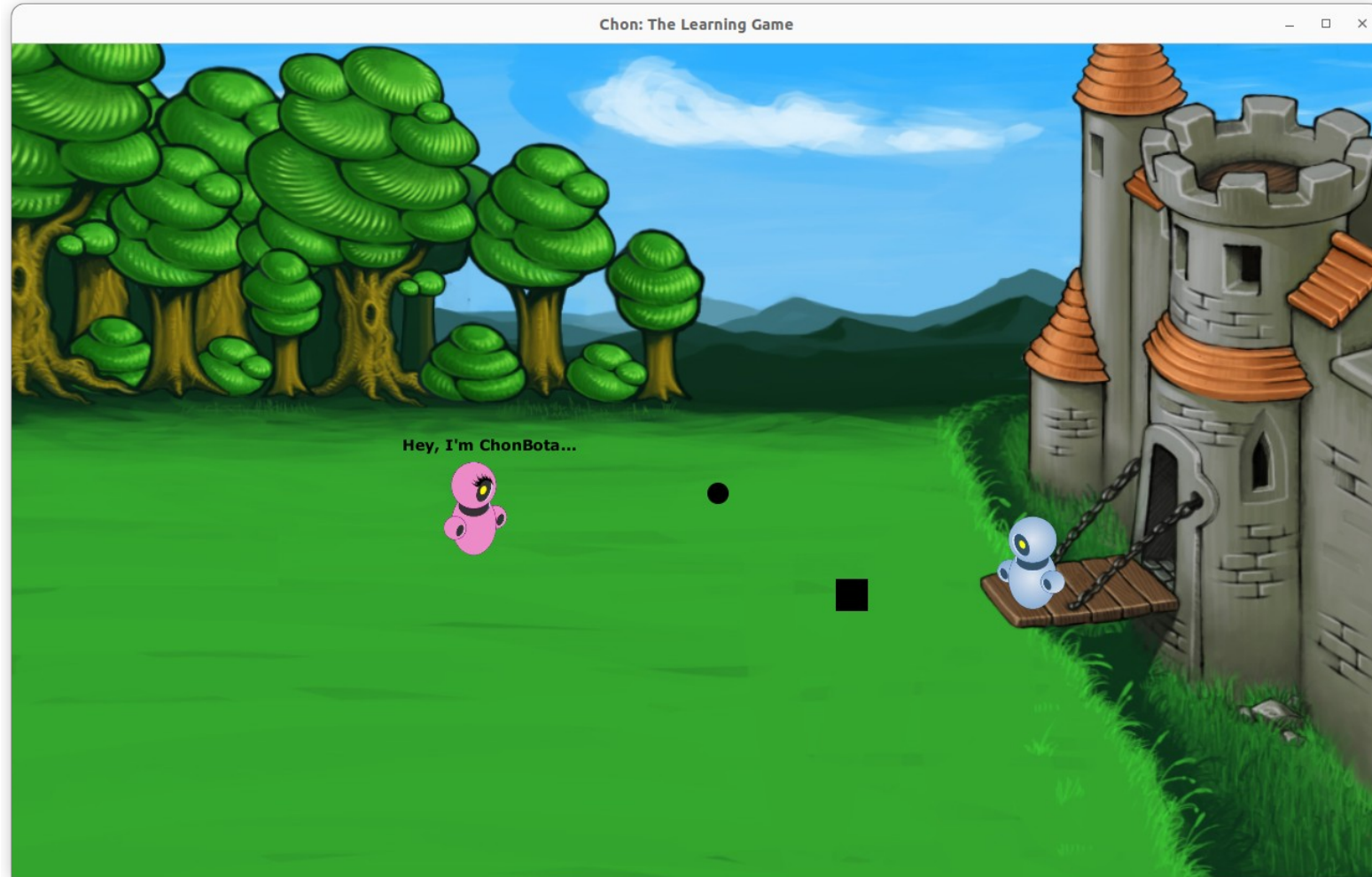
Drawing the Characters



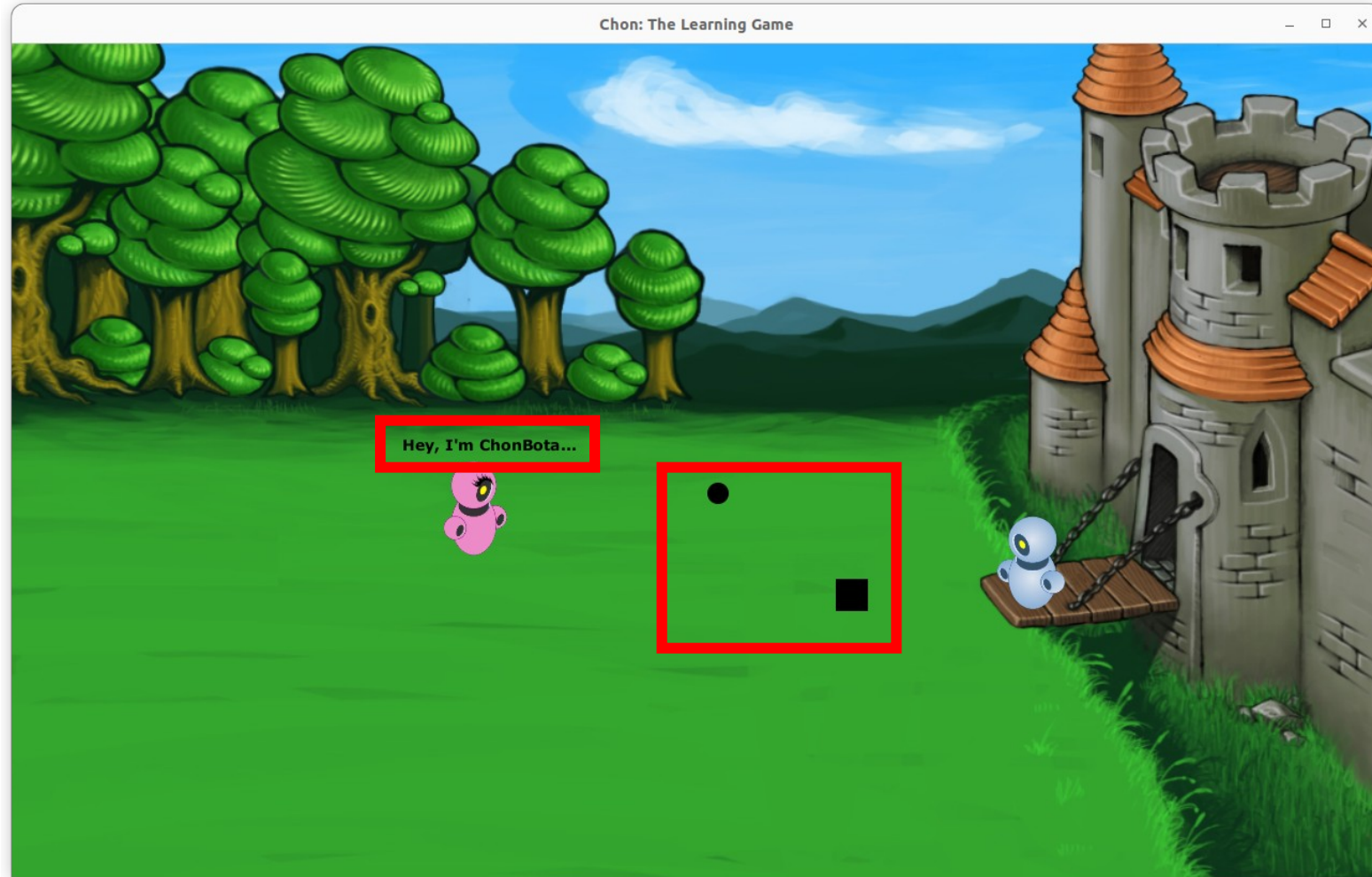
Drawing the Characters



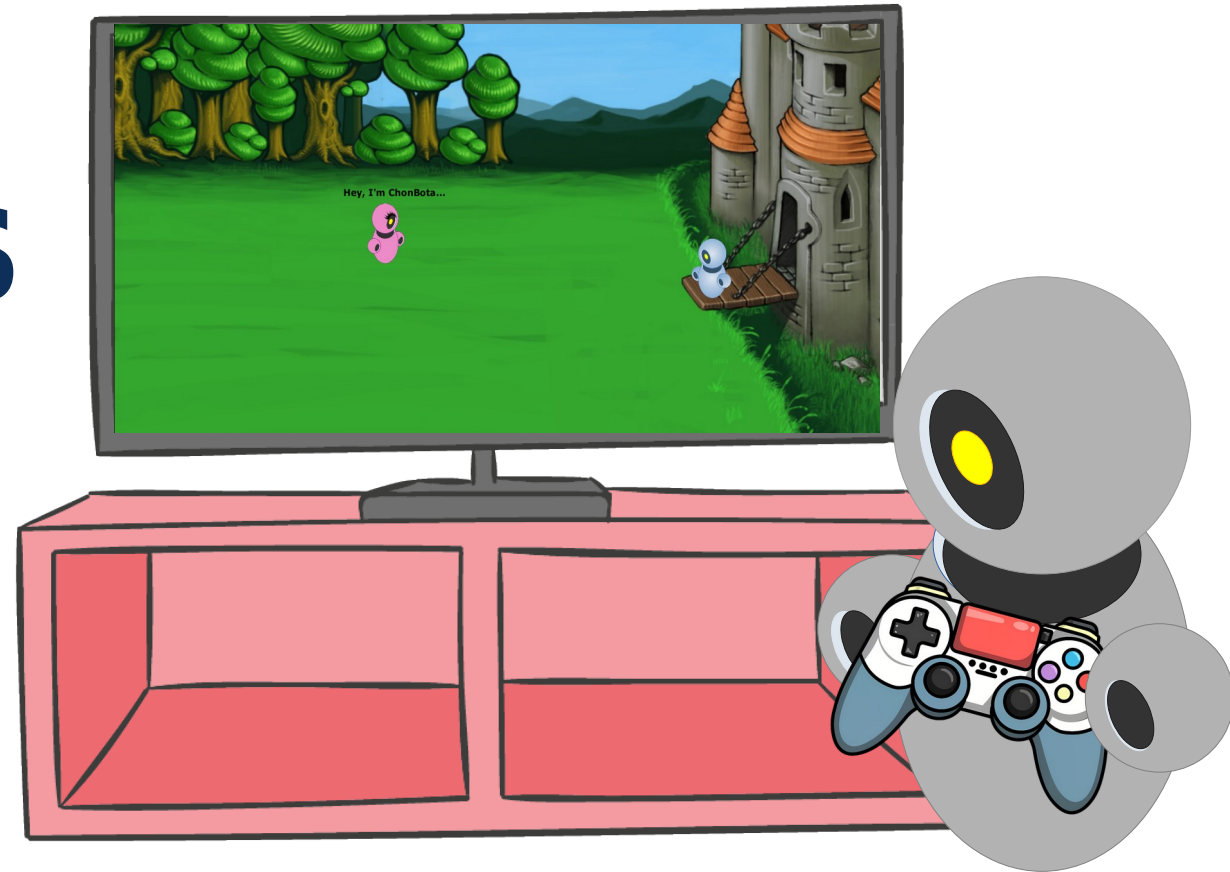
Drawing Other Objects



Drawing Other Objects



MOVING OBJECTS IN THE CANVAS



Scene's Events

In JavaFX, **Events** represent interactions or changes that happen while running a JavaFX application, such as **user inputs** (mouse clicks, key presses), **window actions** (resizing, closing), or **internal changes** (animation updates).

Events



Events



Events



```
○ Pressed: UP  
Released: UP  
Pressed: DOWN  
Released: DOWN  
Pressed: RIGHT  
Released: RIGHT  
Pressed: SPACE  
Released: SPACE  
Pressed: UP  
Released: UP  
□
```



Animation

The **AnimationTimer** allows the creation of animations by repeatedly executing a code block at each frame.

Animation

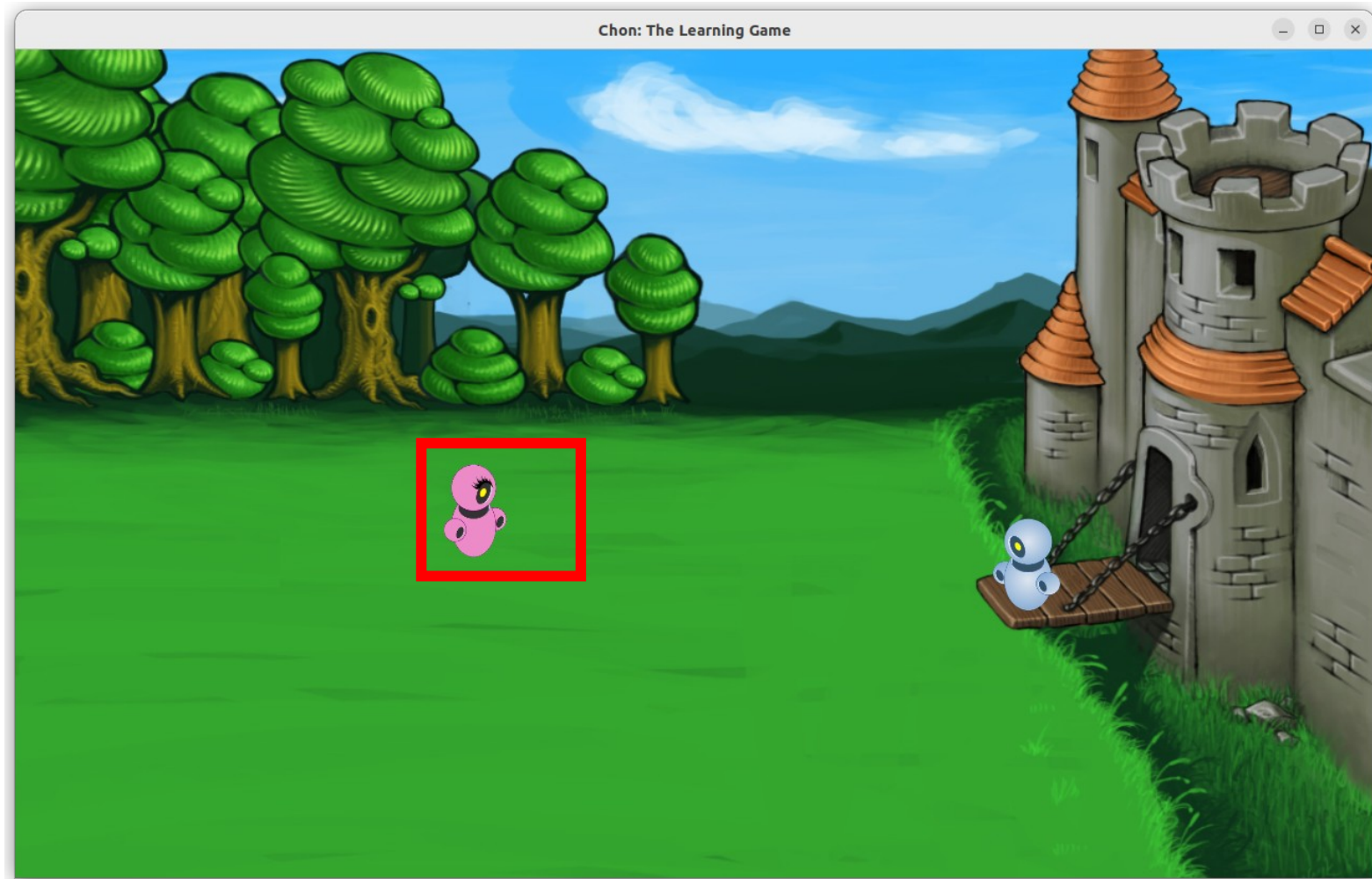
The **AnimationTimer** allows the creation of animations by repeatedly executing a code block at each frame.

It provides a way to perform updates and render graphics, making it suitable for **creating animations, game loops, and other time-based tasks.**

Animation



Animation



○ Pressed: RIGHT
Released: RIGHT
□



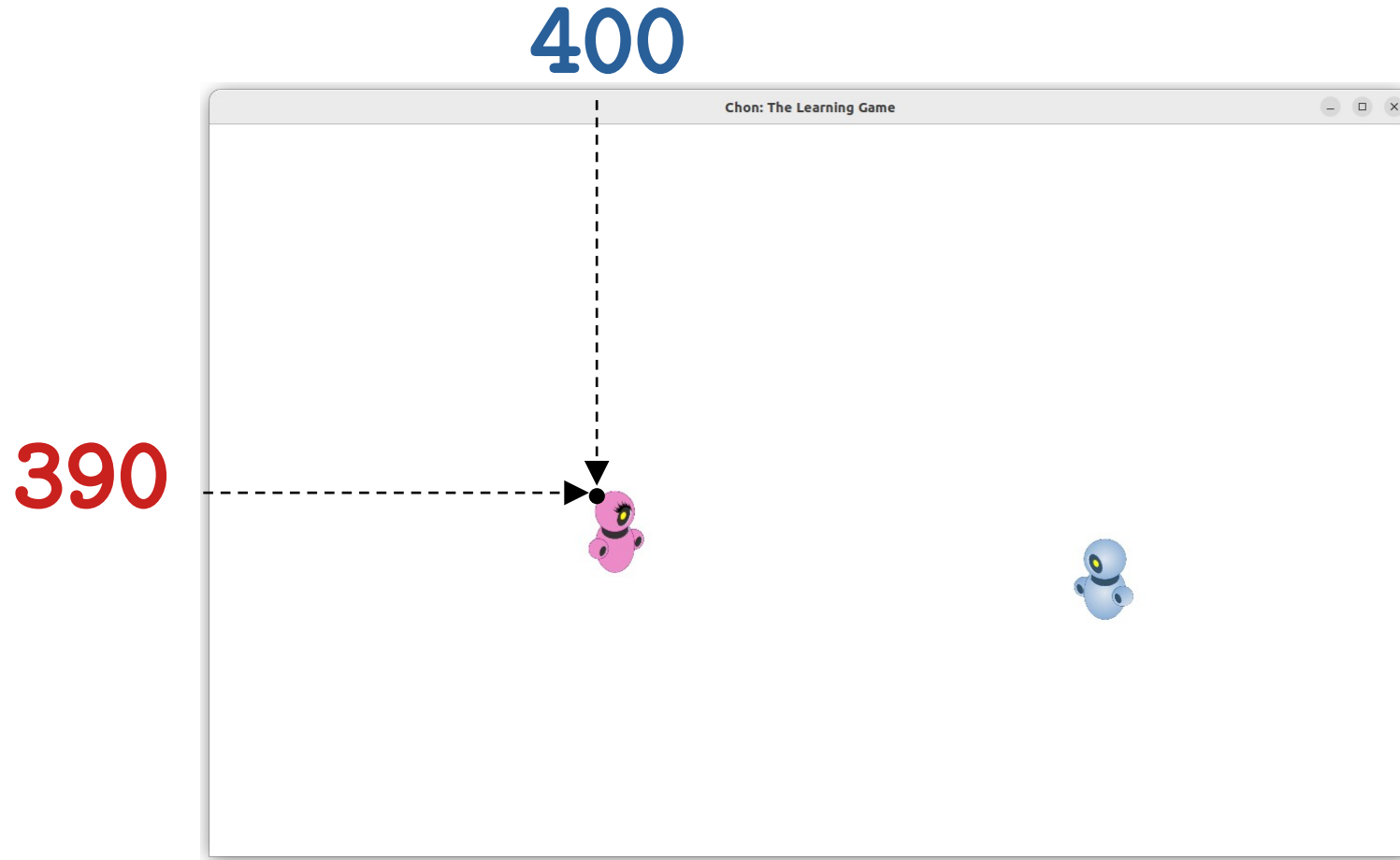
Animation



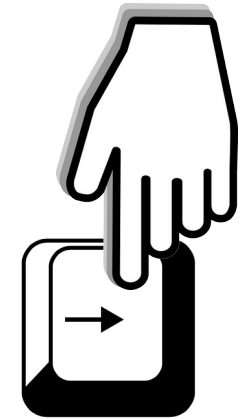
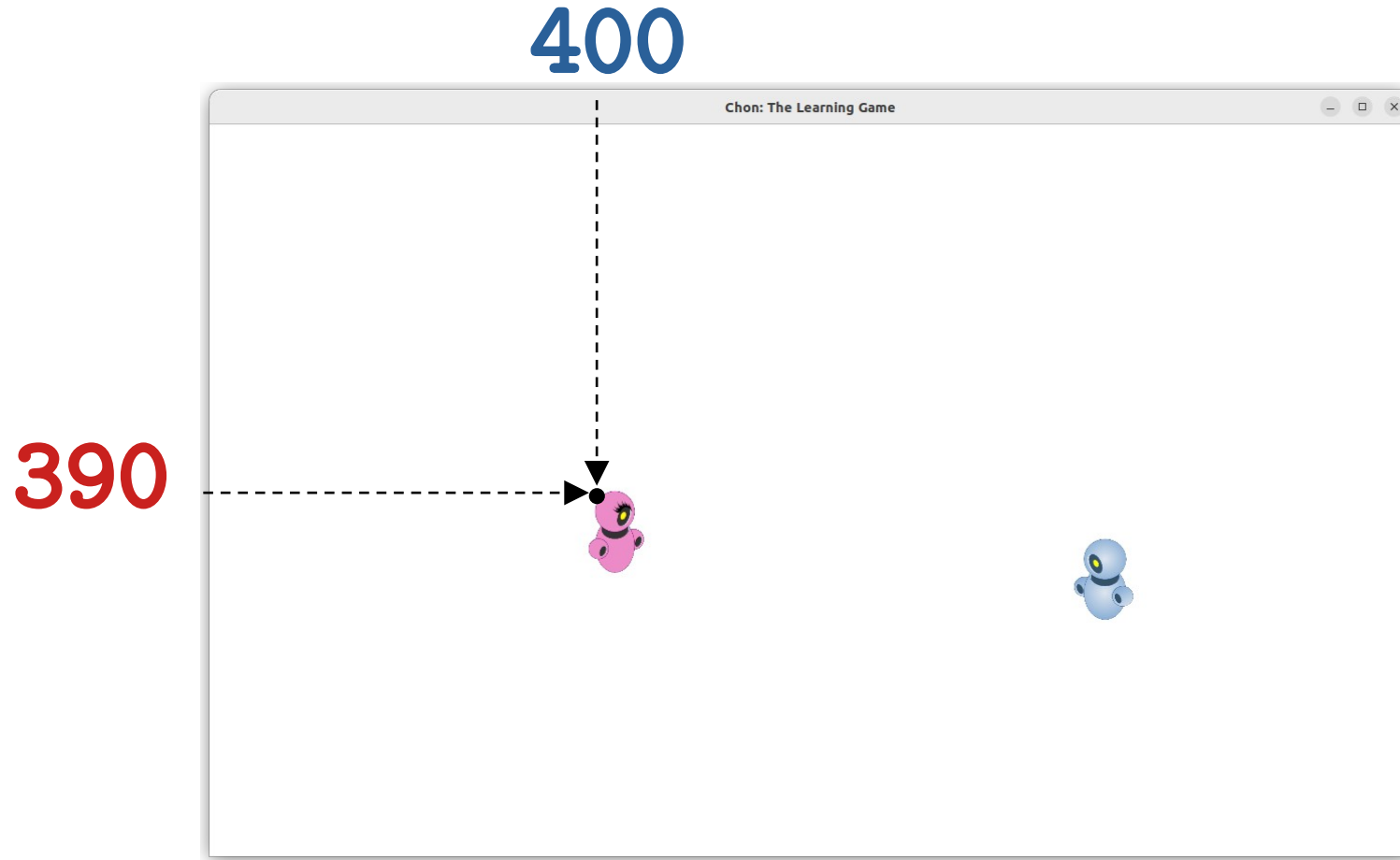
○ Pressed: RIGHT
Released: RIGHT
□



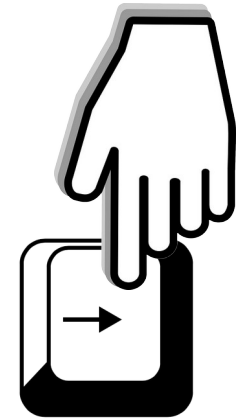
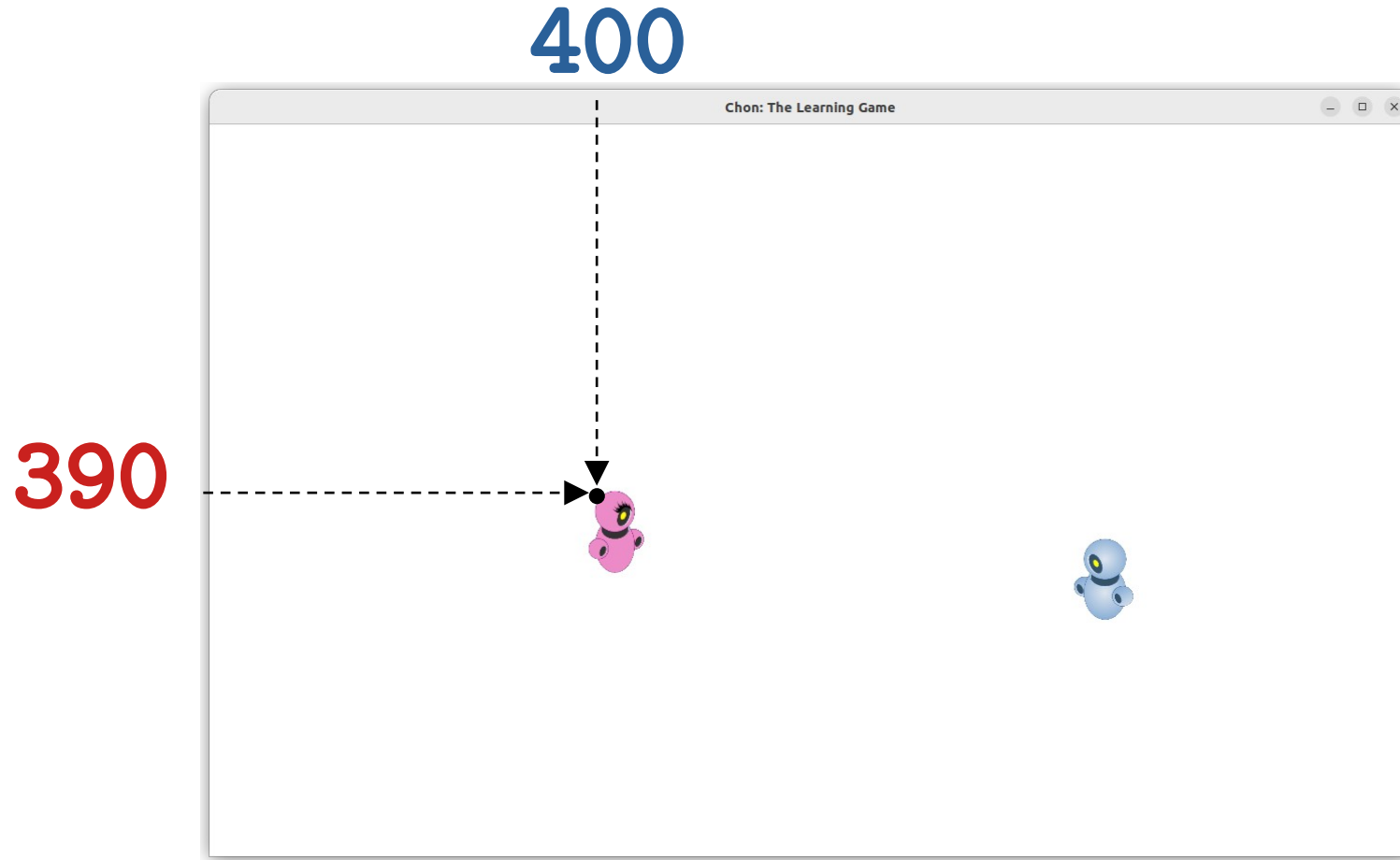
The RIGHT Logic



The RIGHT Logic

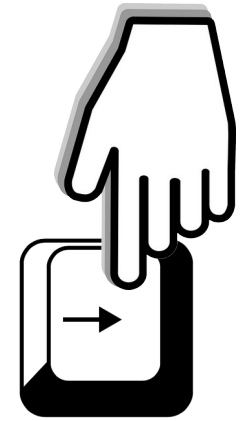
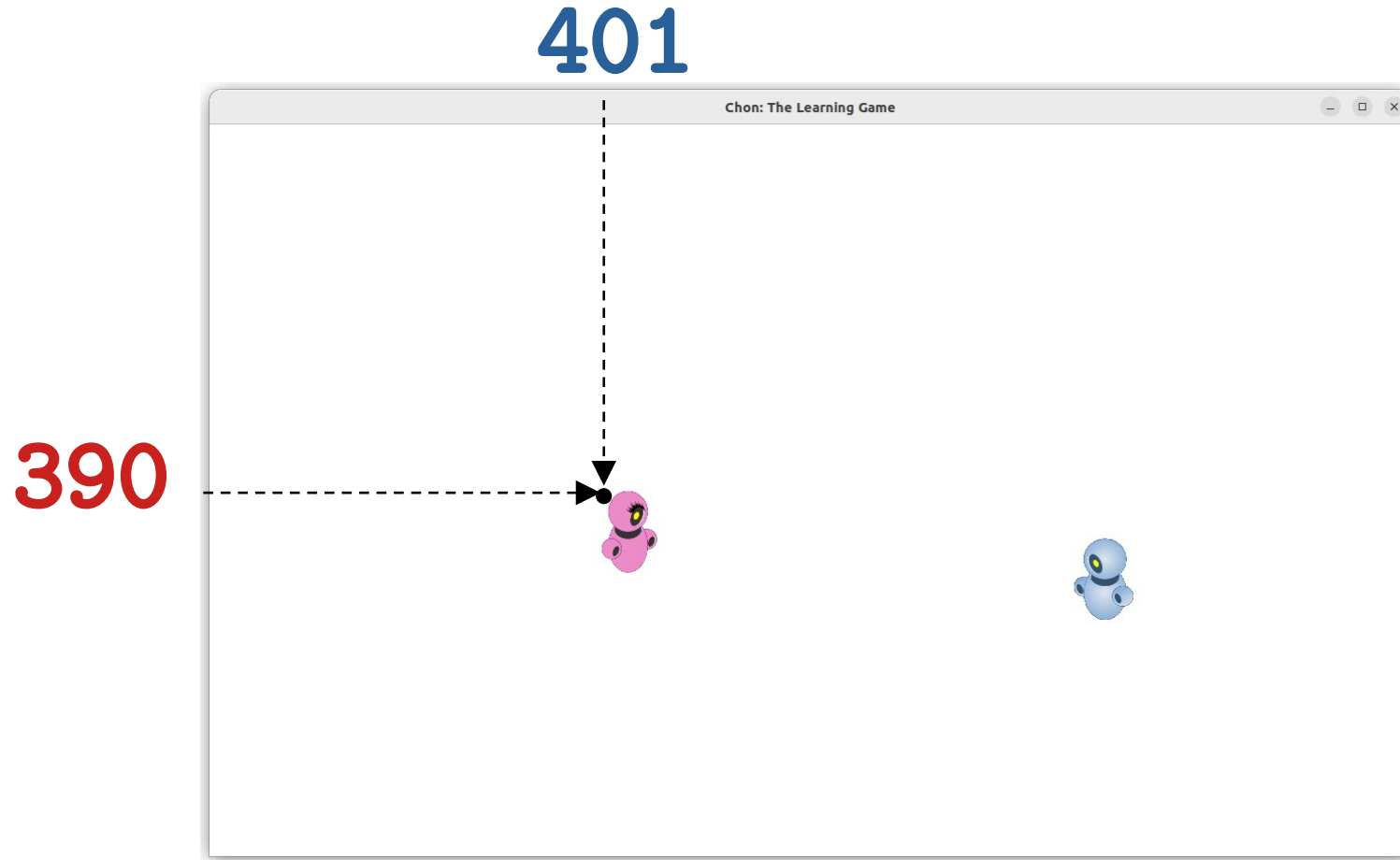


The RIGHT Logic



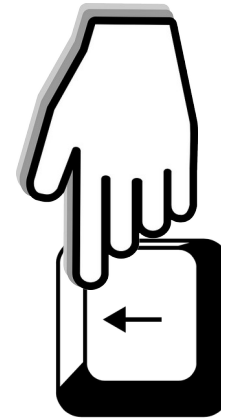
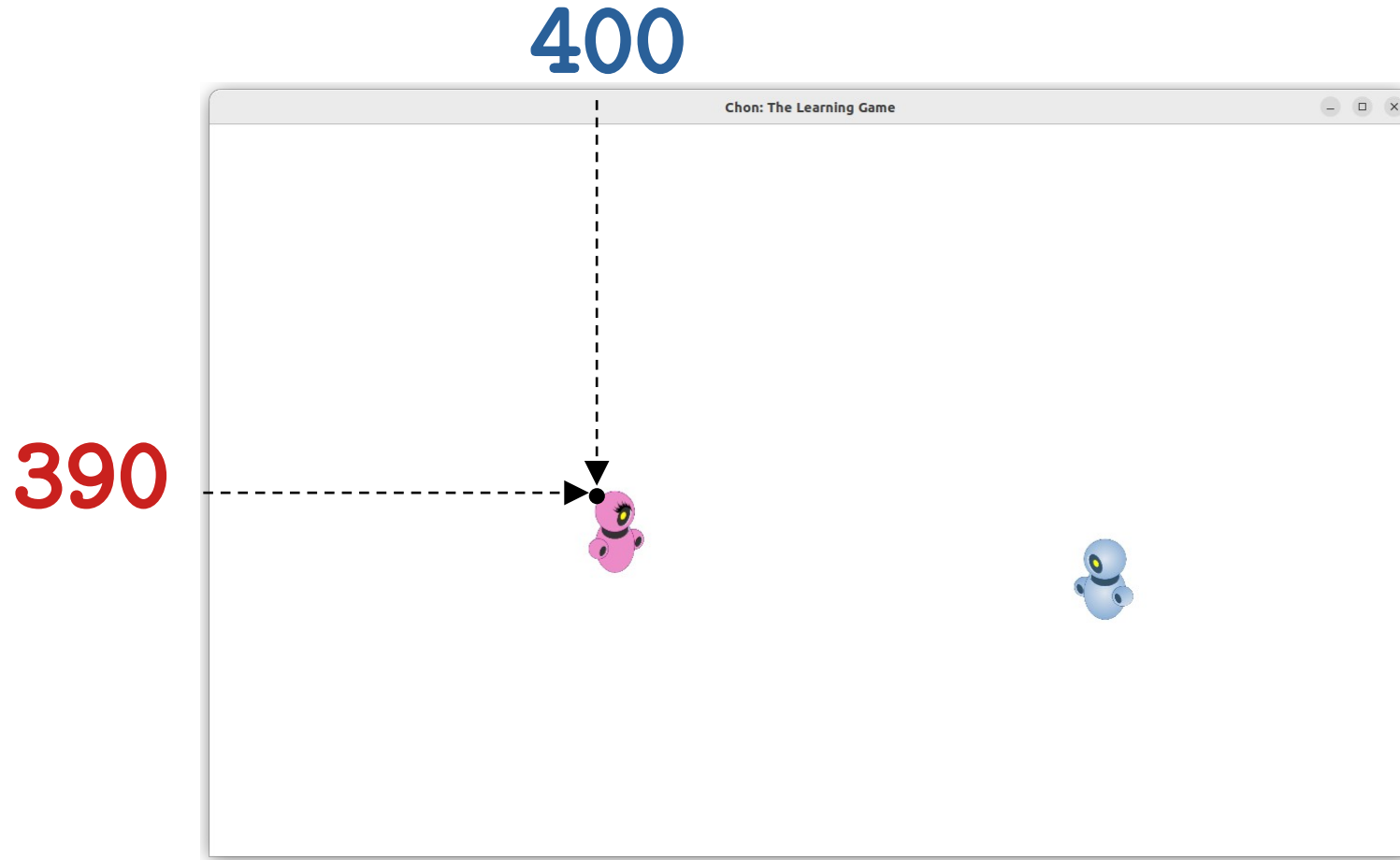
$x + value$

The RIGHT Logic

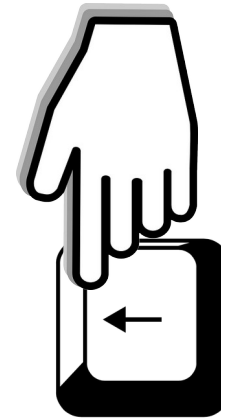
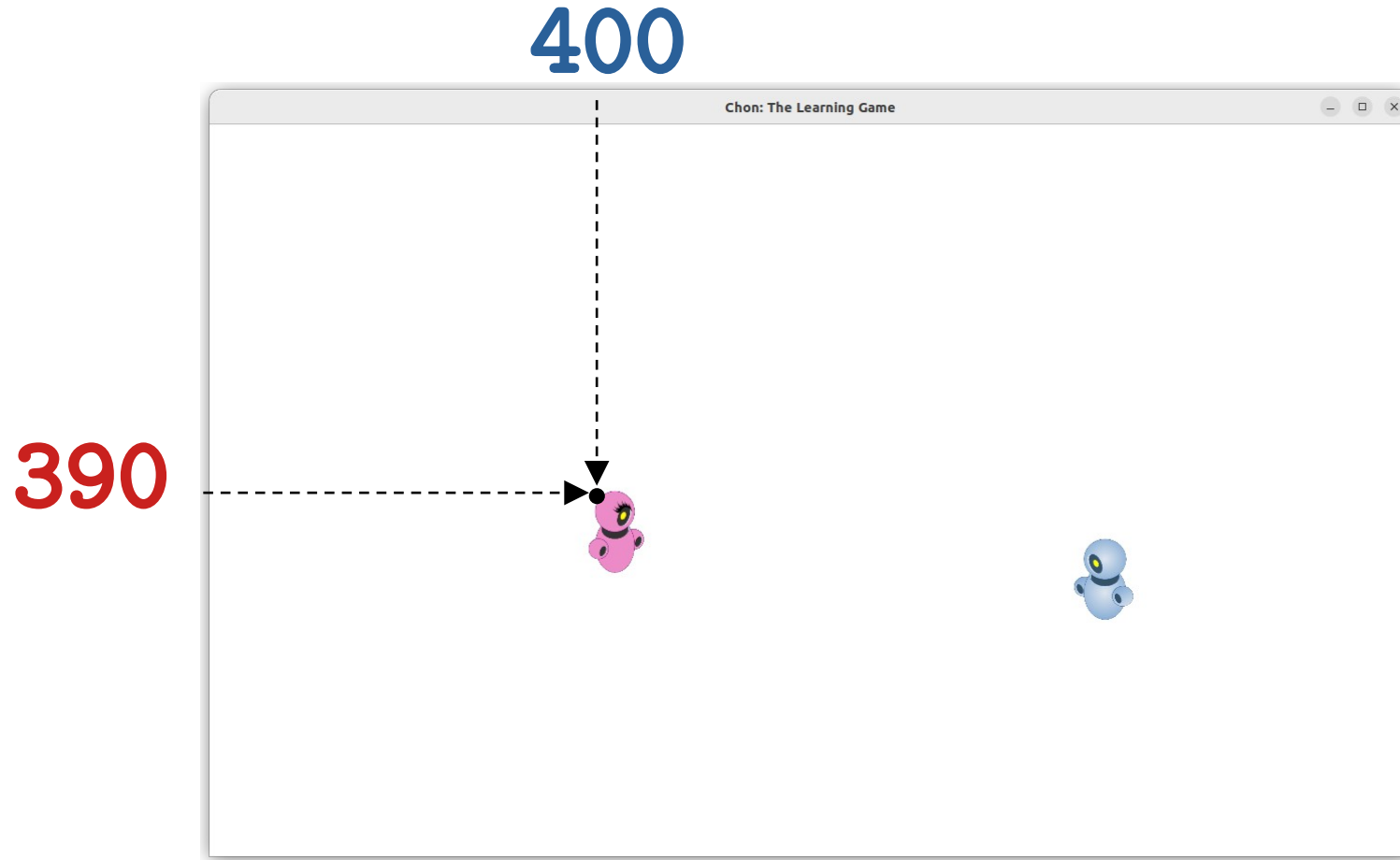


$x + \text{value}$

The LEFT Logic

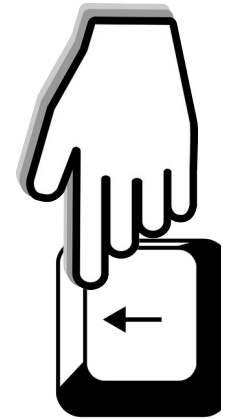
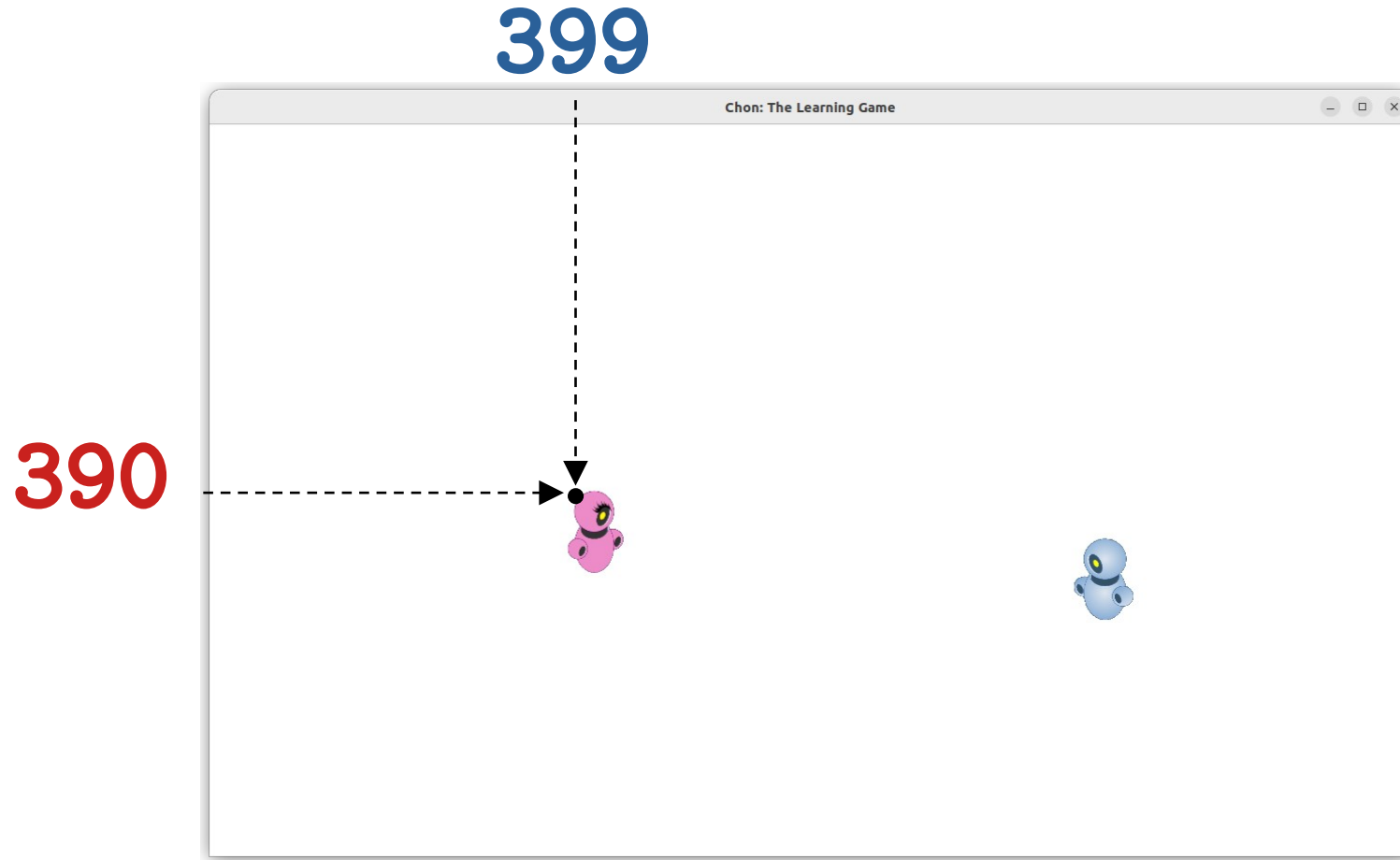


The LEFT Logic



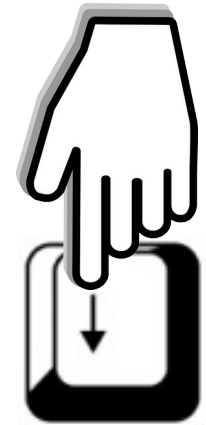
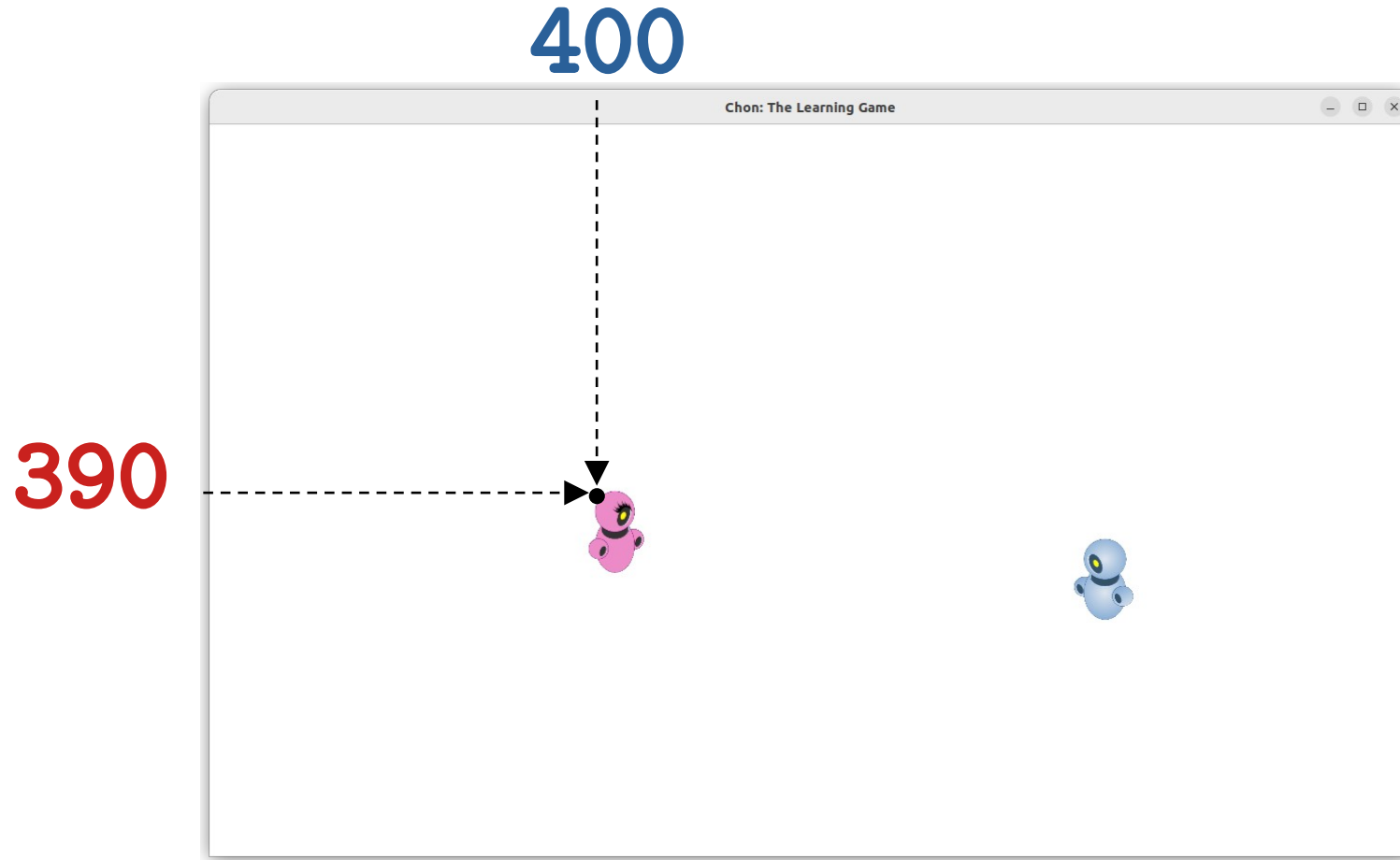
x - value

The LEFT Logic

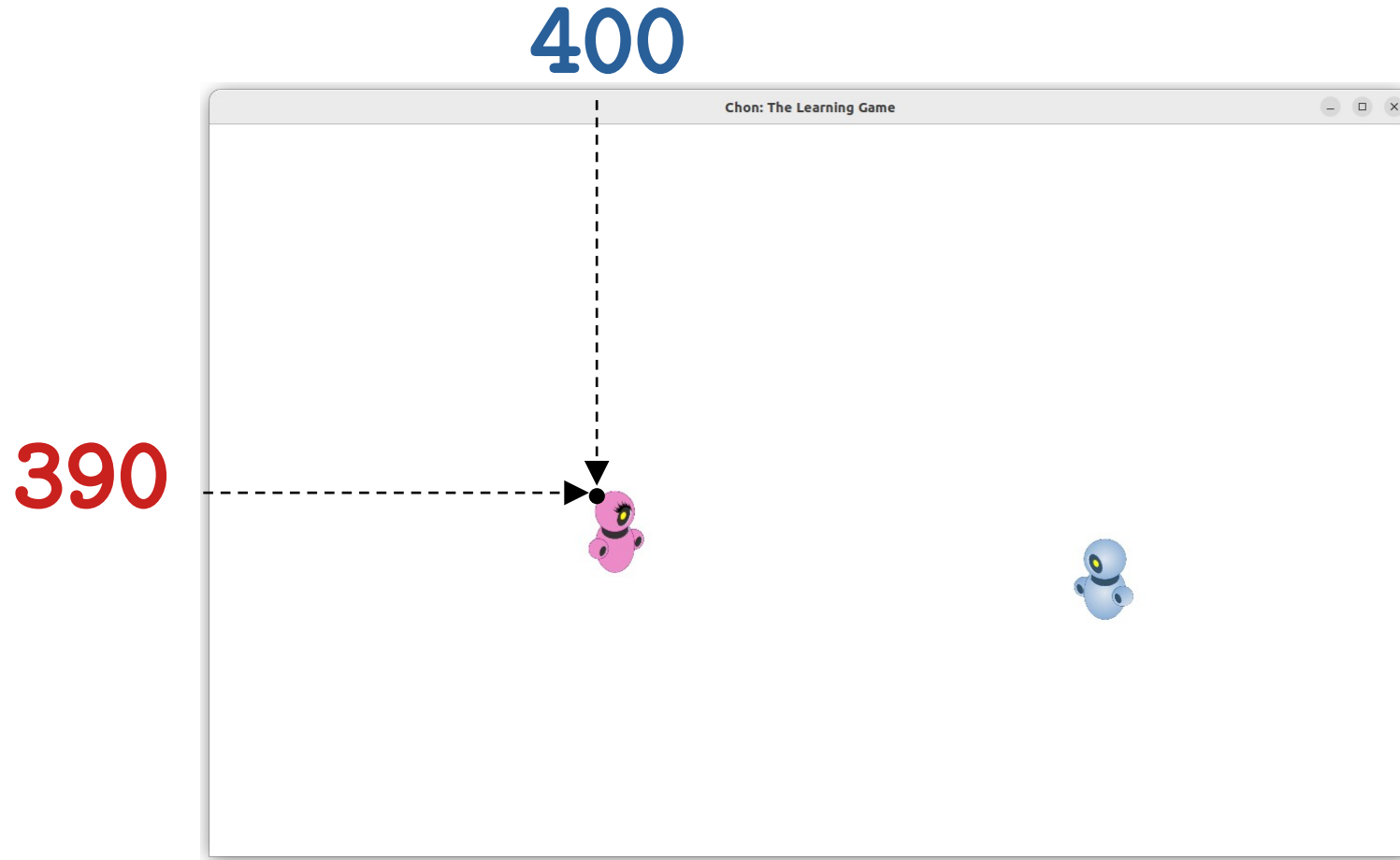


x - value

The DOWN Logic

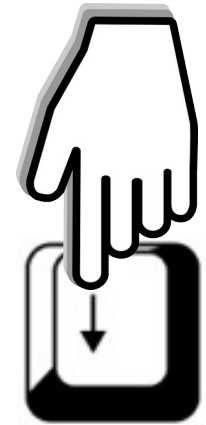
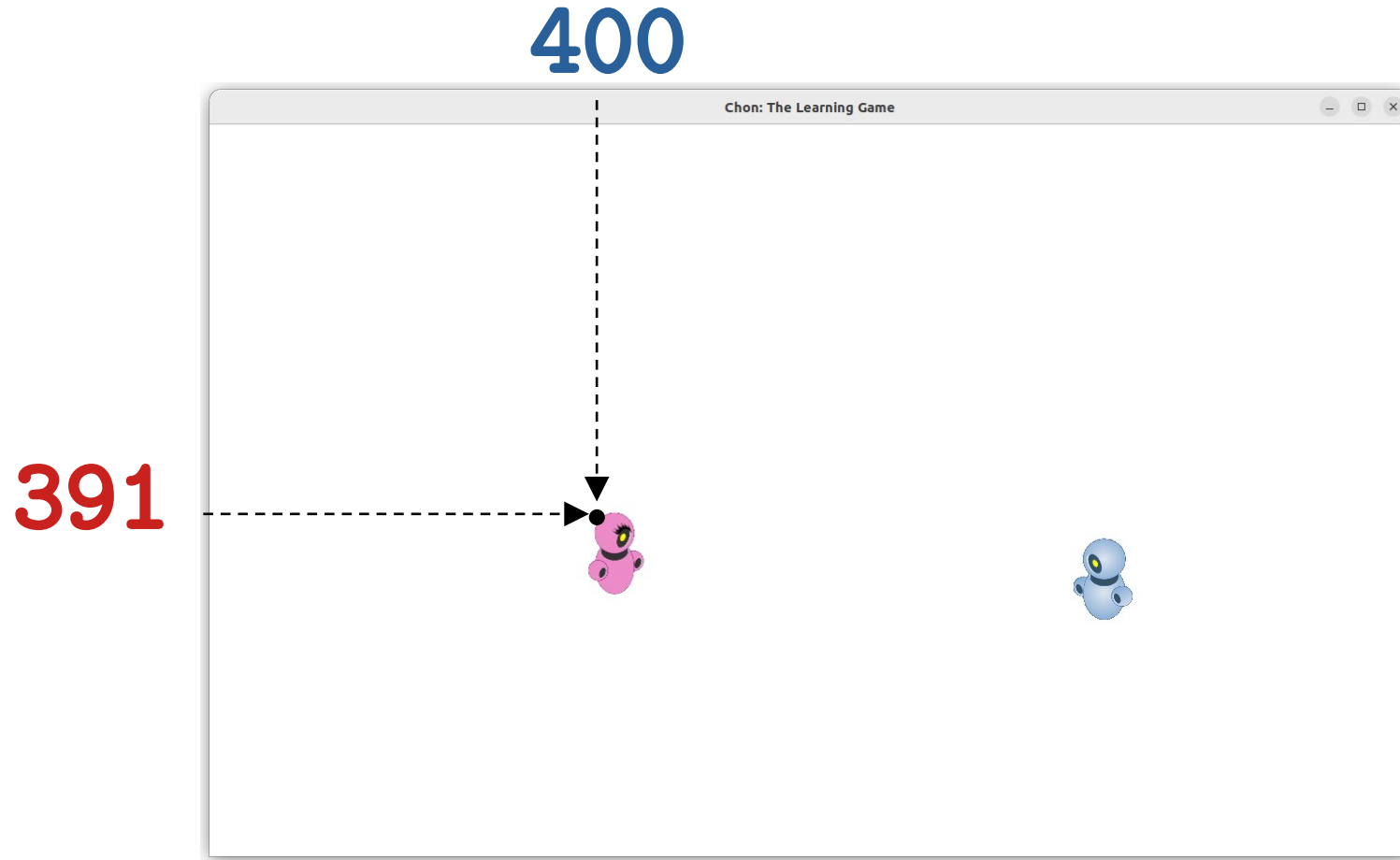


The DOWN Logic



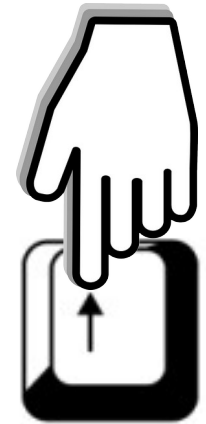
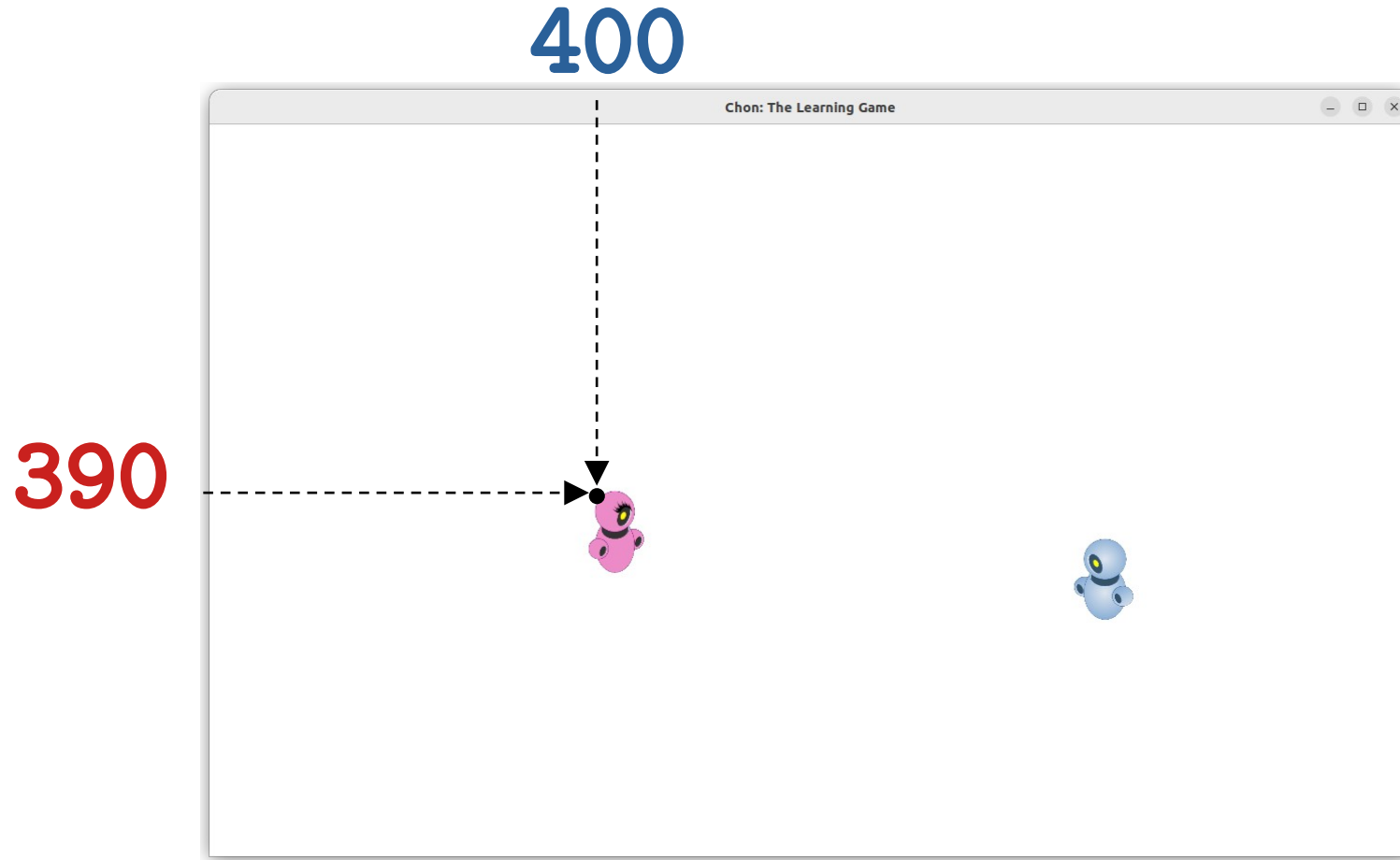
$y + \text{value}$

The DOWN Logic

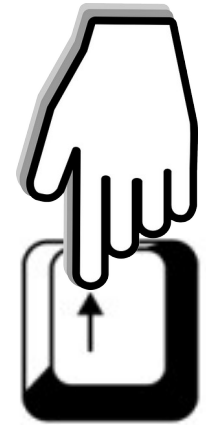
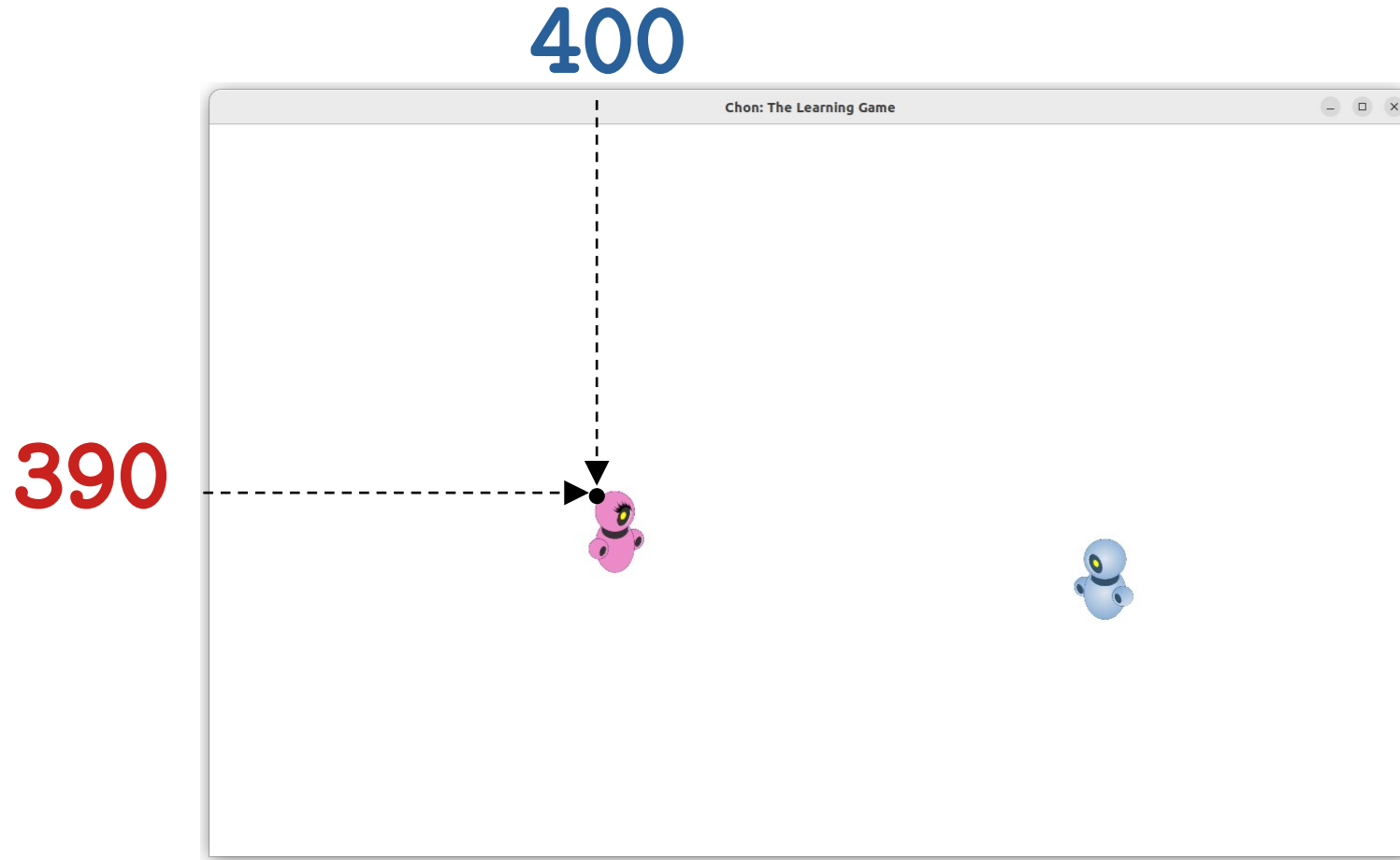


$y + \text{value}$

The UP Logic

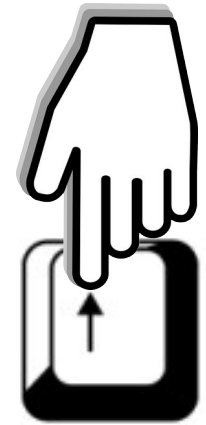
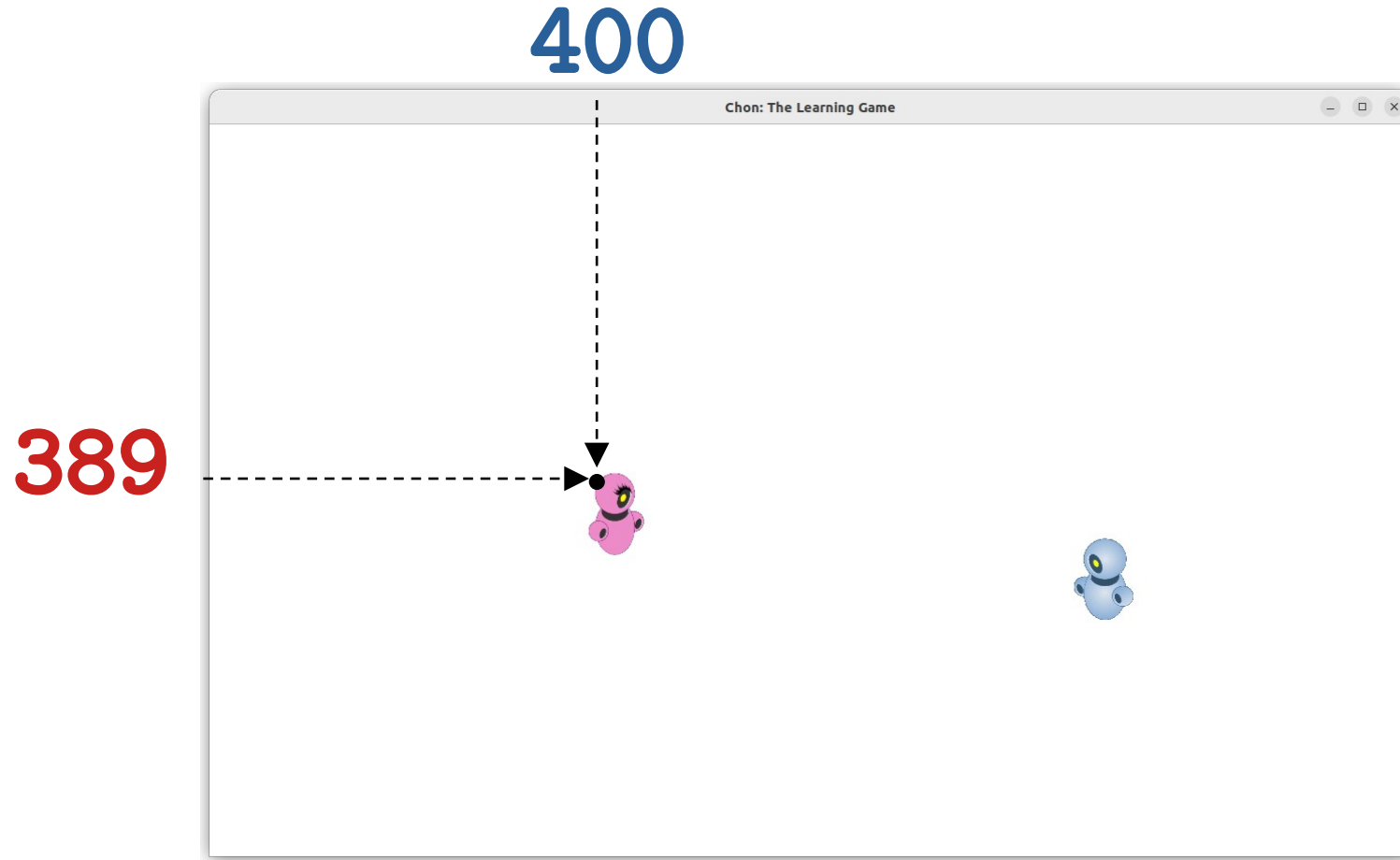


The UP Logic



y - value

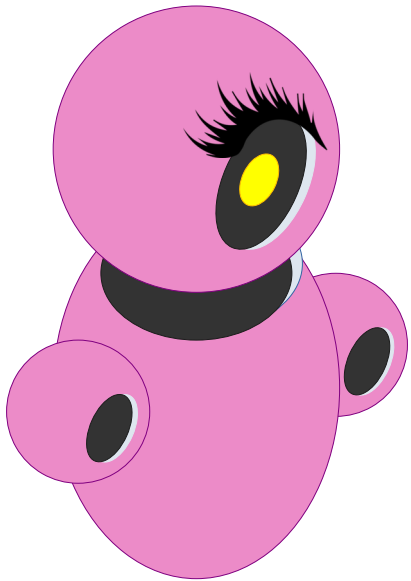
The UP Logic



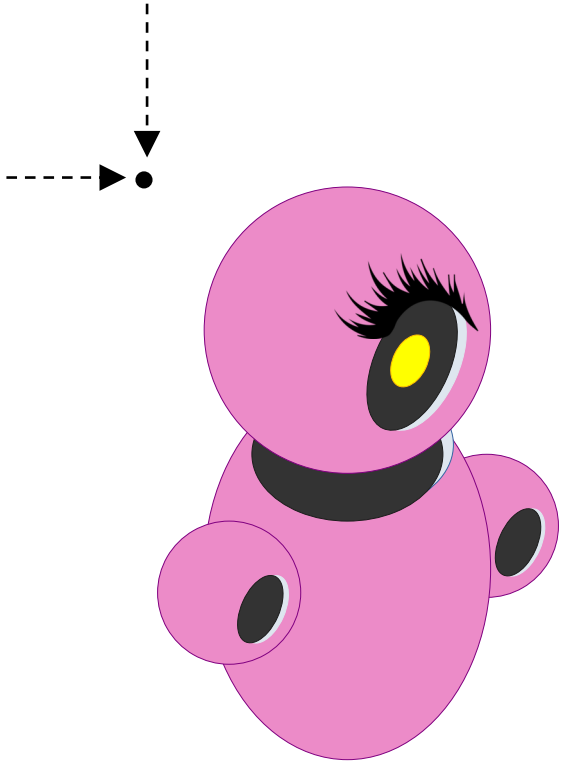
y - value

Defining Boundaries

Every **Image** has:



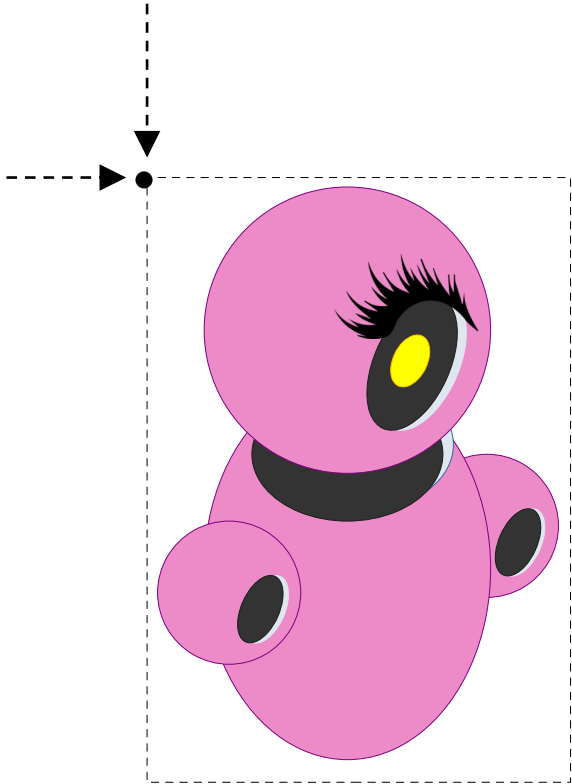
Defining Boundaries



Every **Image** has:

- x and y points;

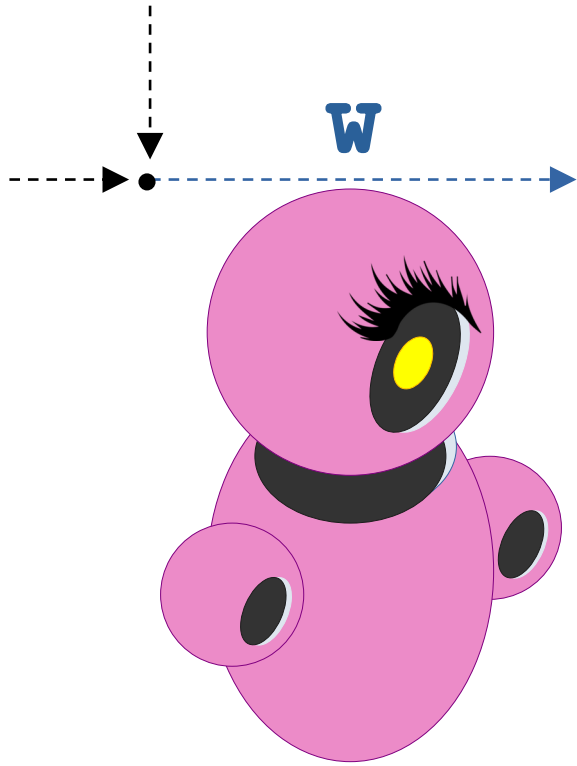
Defining Boundaries



Every **Image** has:

- x and y points;

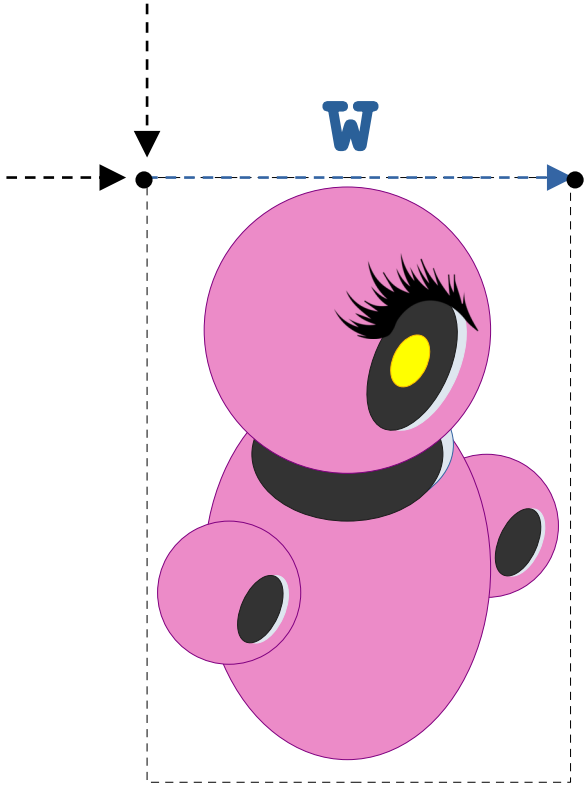
Defining Boundaries



Every **Image** has:

- x and y points;
 - Width;

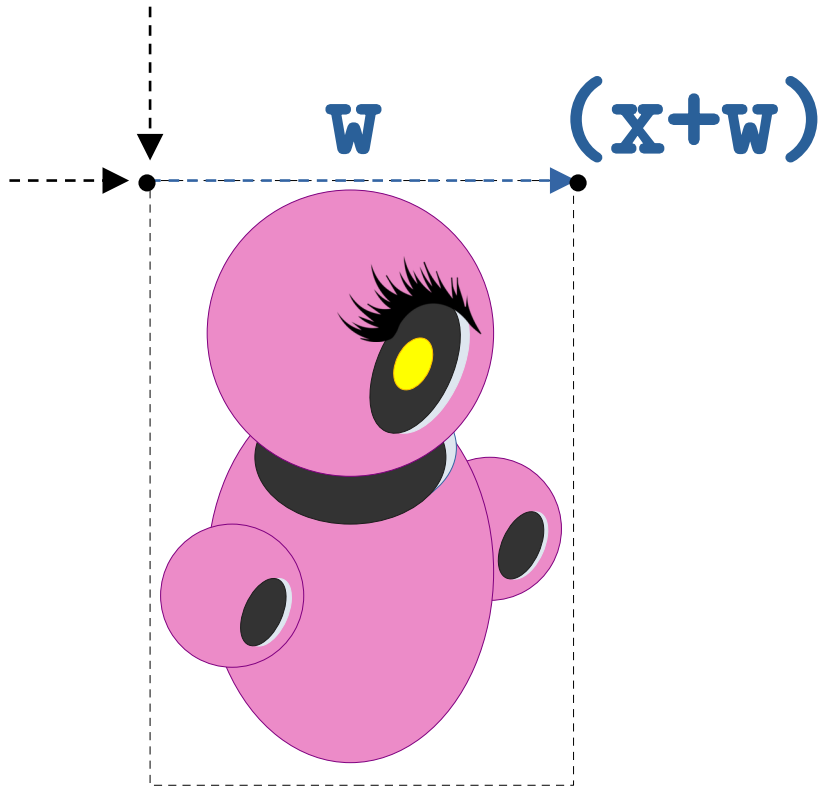
Defining Boundaries



Every **Image** has:

- x and y points;
 - Width;

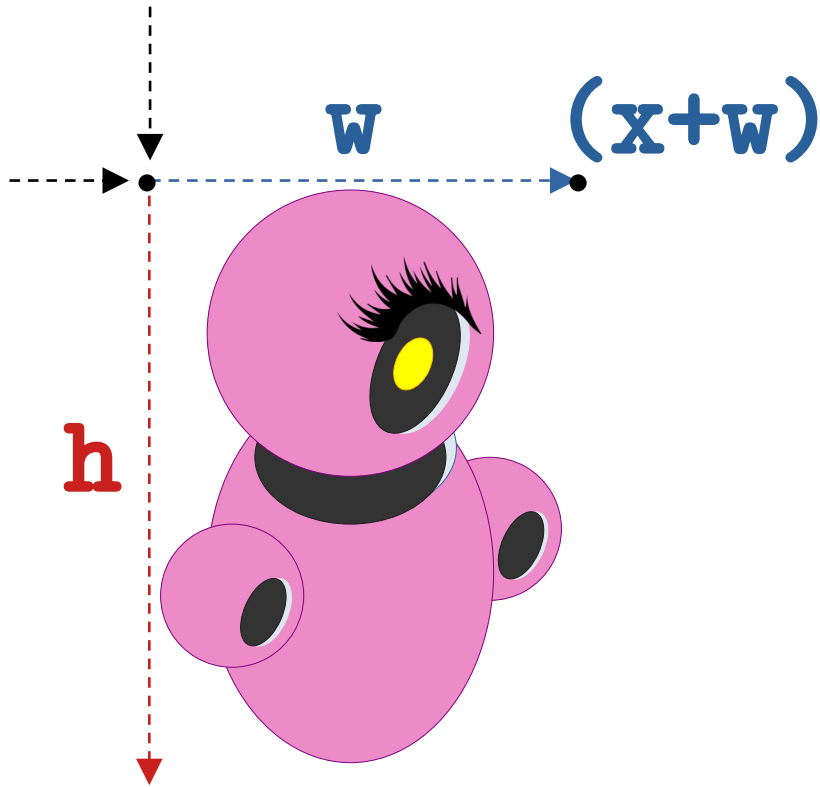
Defining Boundaries



Every Image has:

- x and y points;
 - Width;

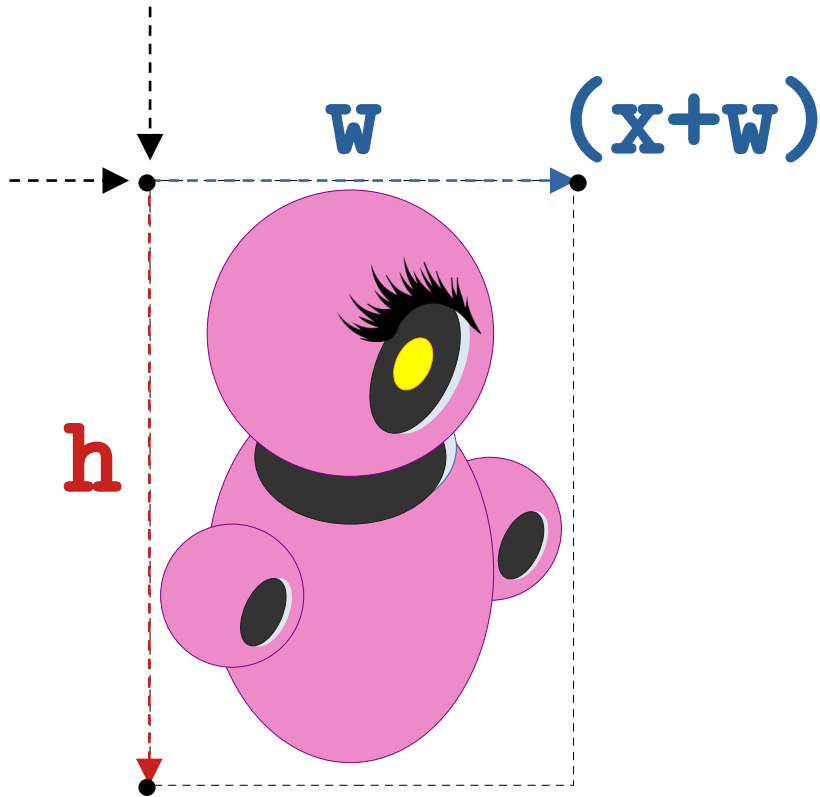
Defining Boundaries



Every **Image** has:

- x and y points;
 - Width;
 - Height.

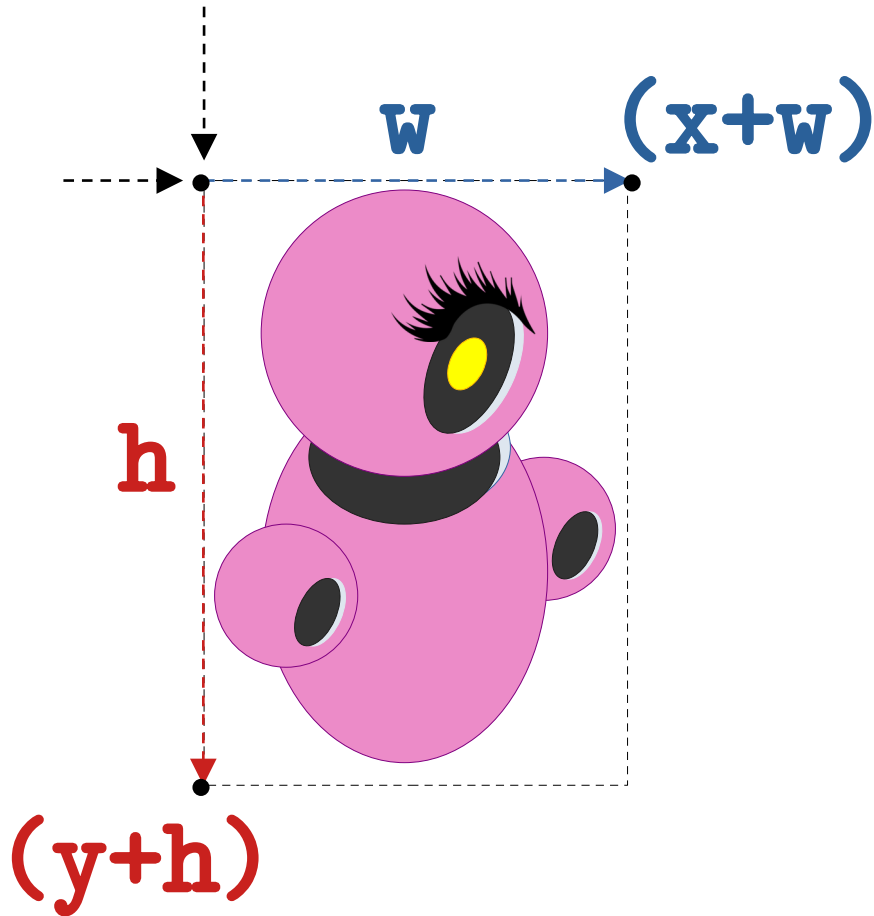
Defining Boundaries



Every Image has:

- x and y points;
 - Width;
 - Height.

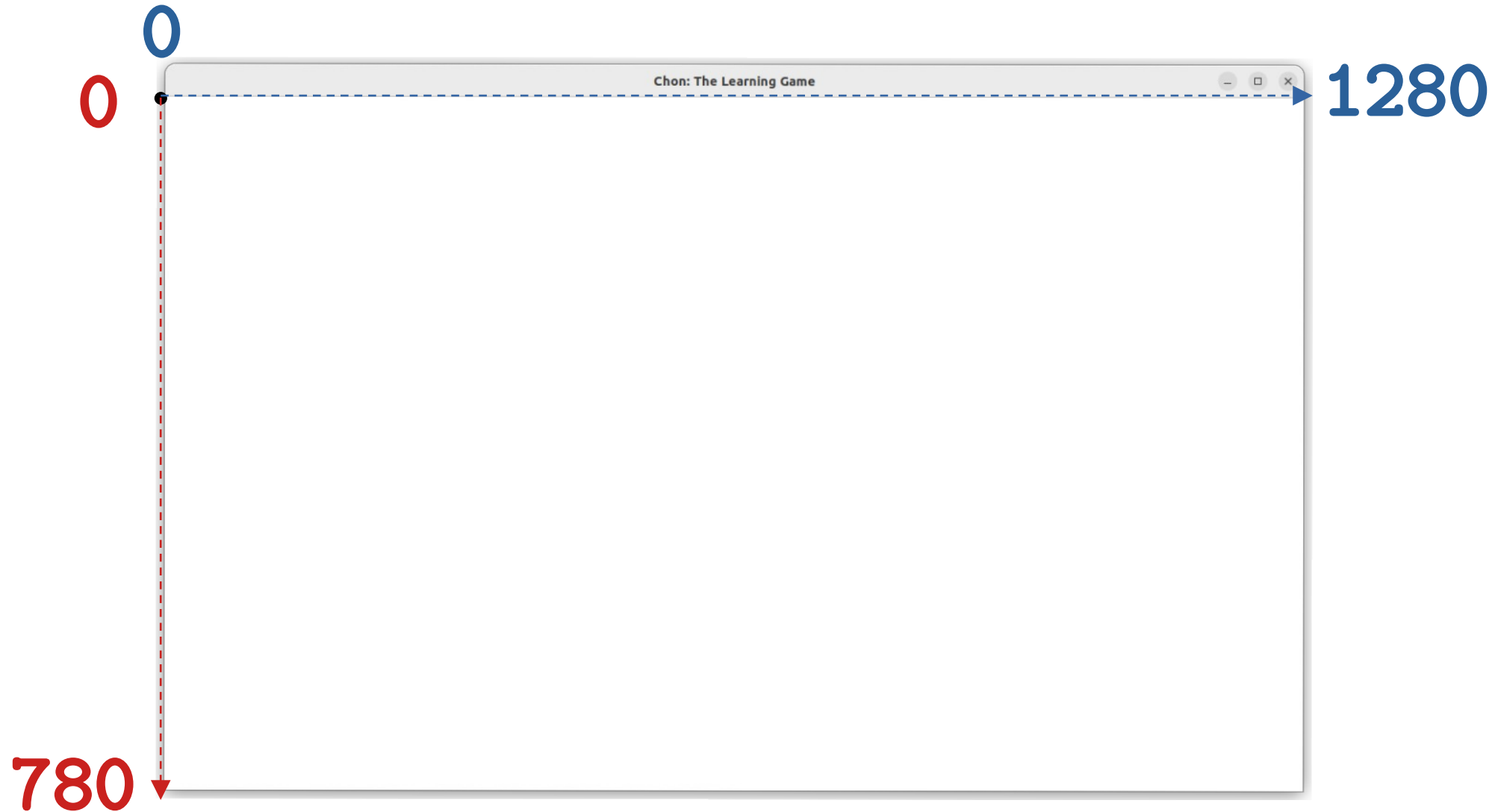
Defining Boundaries



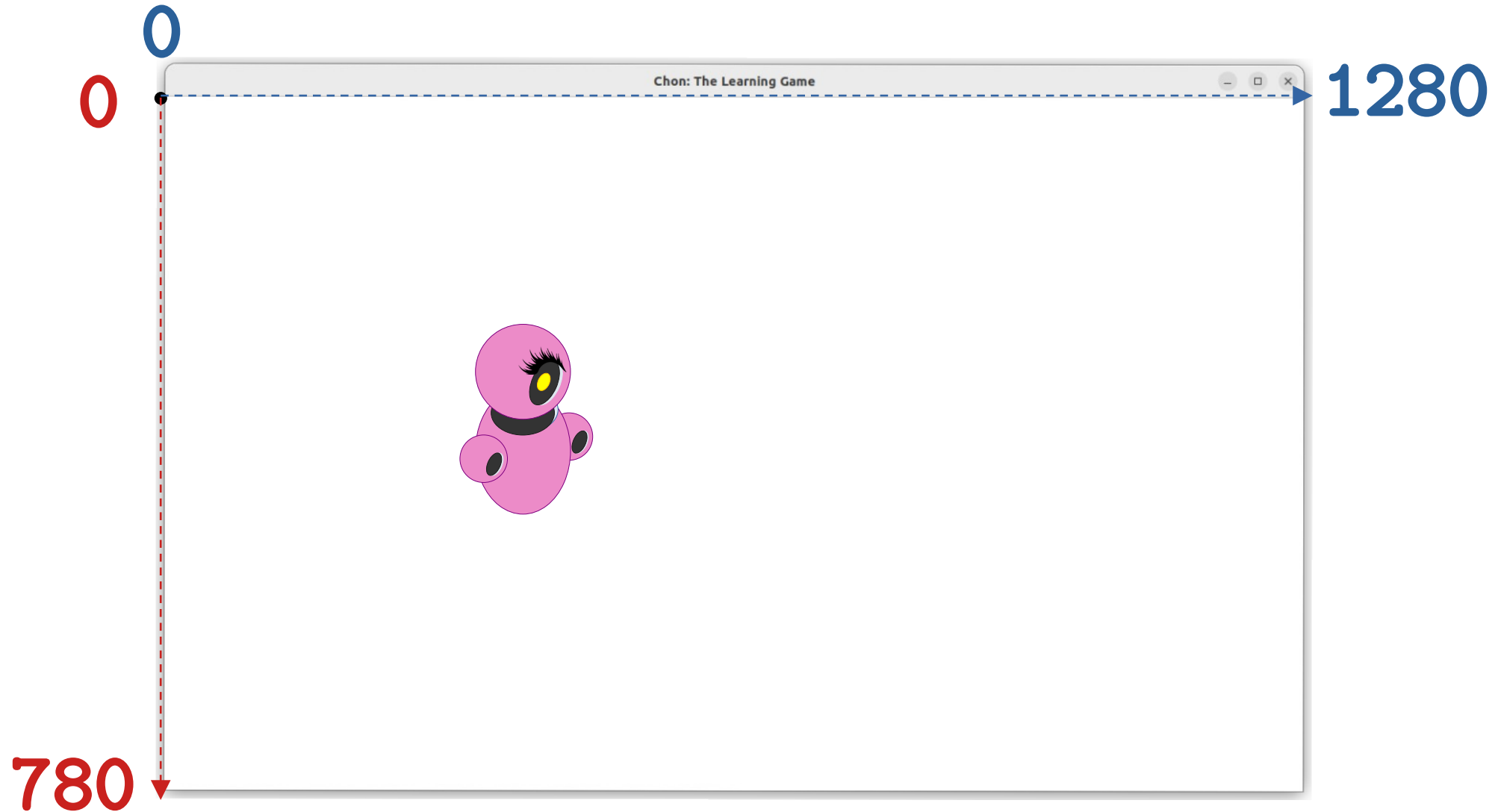
Every Image has:

- x and y points;
 - Width;
 - Height.

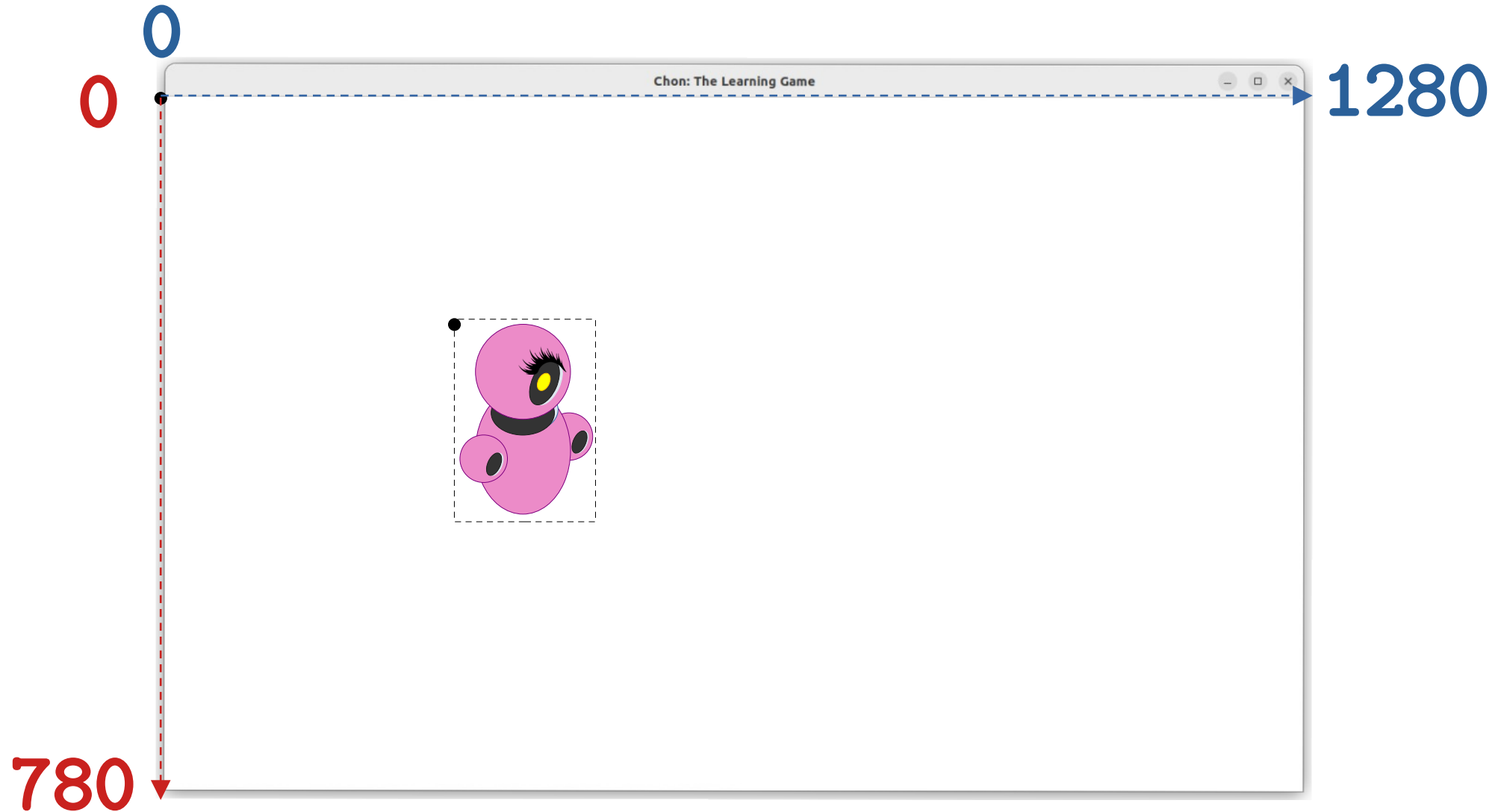
Defining Boundaries



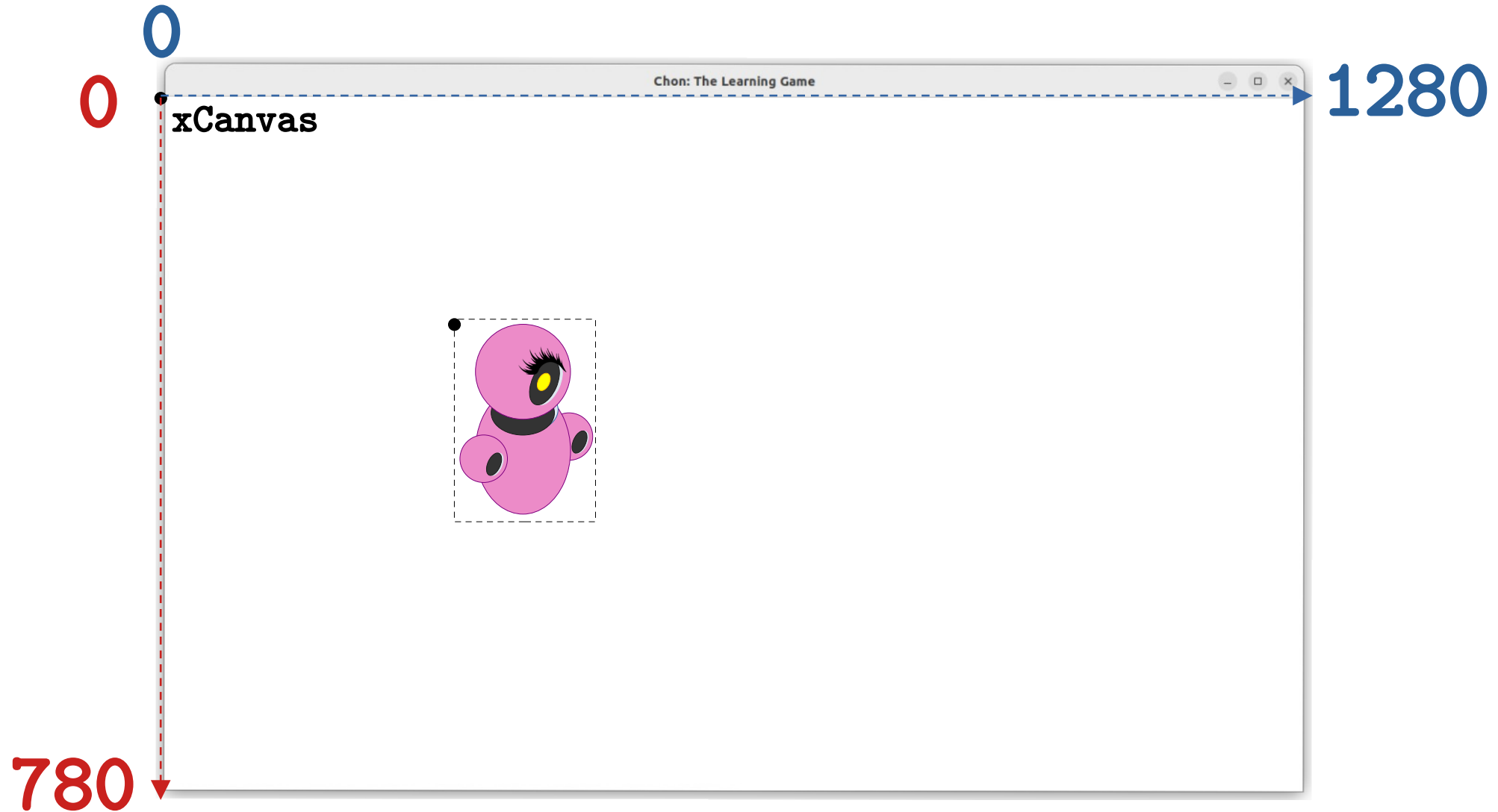
Defining Boundaries



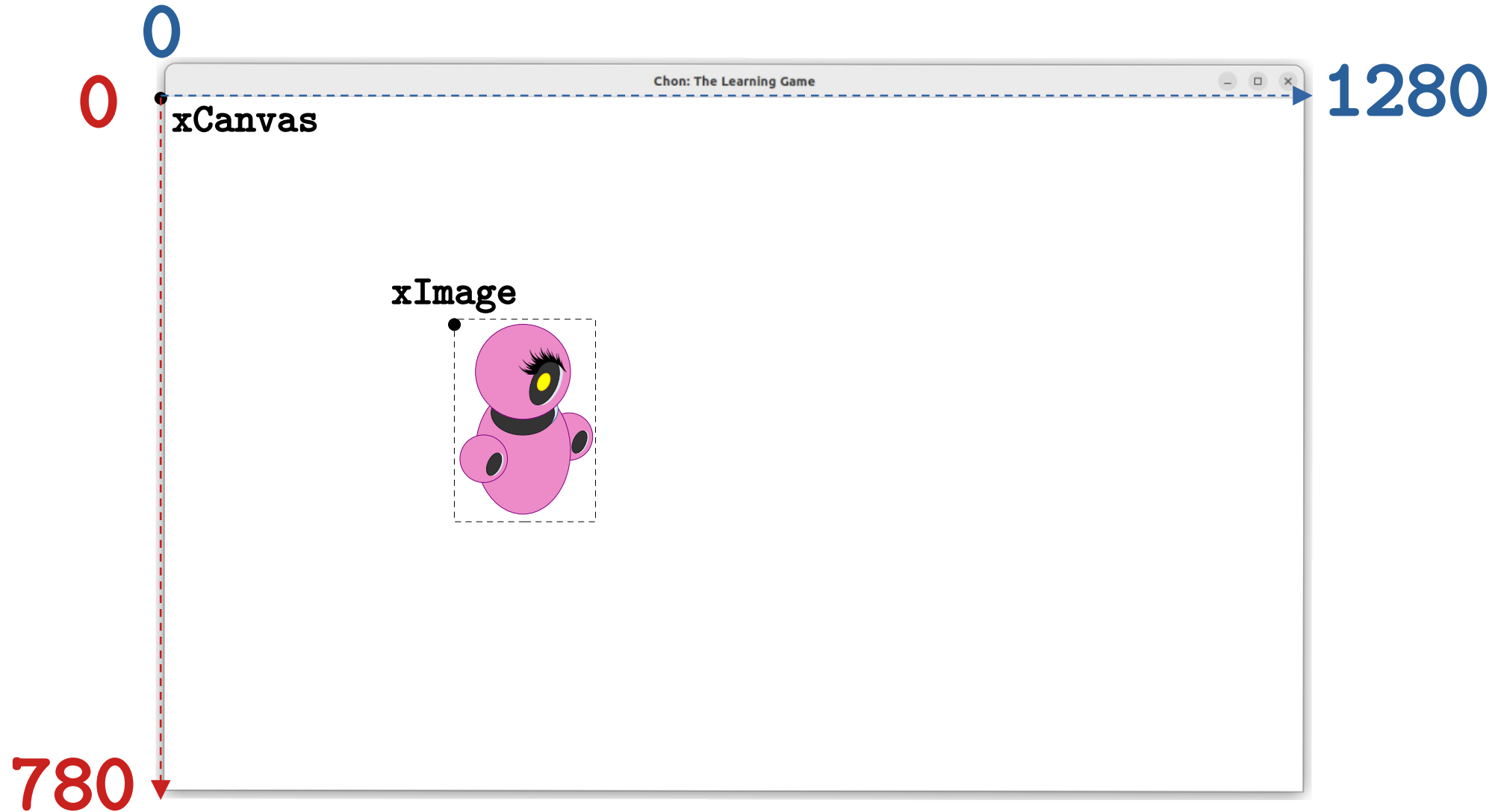
Defining Boundaries at the LEFT



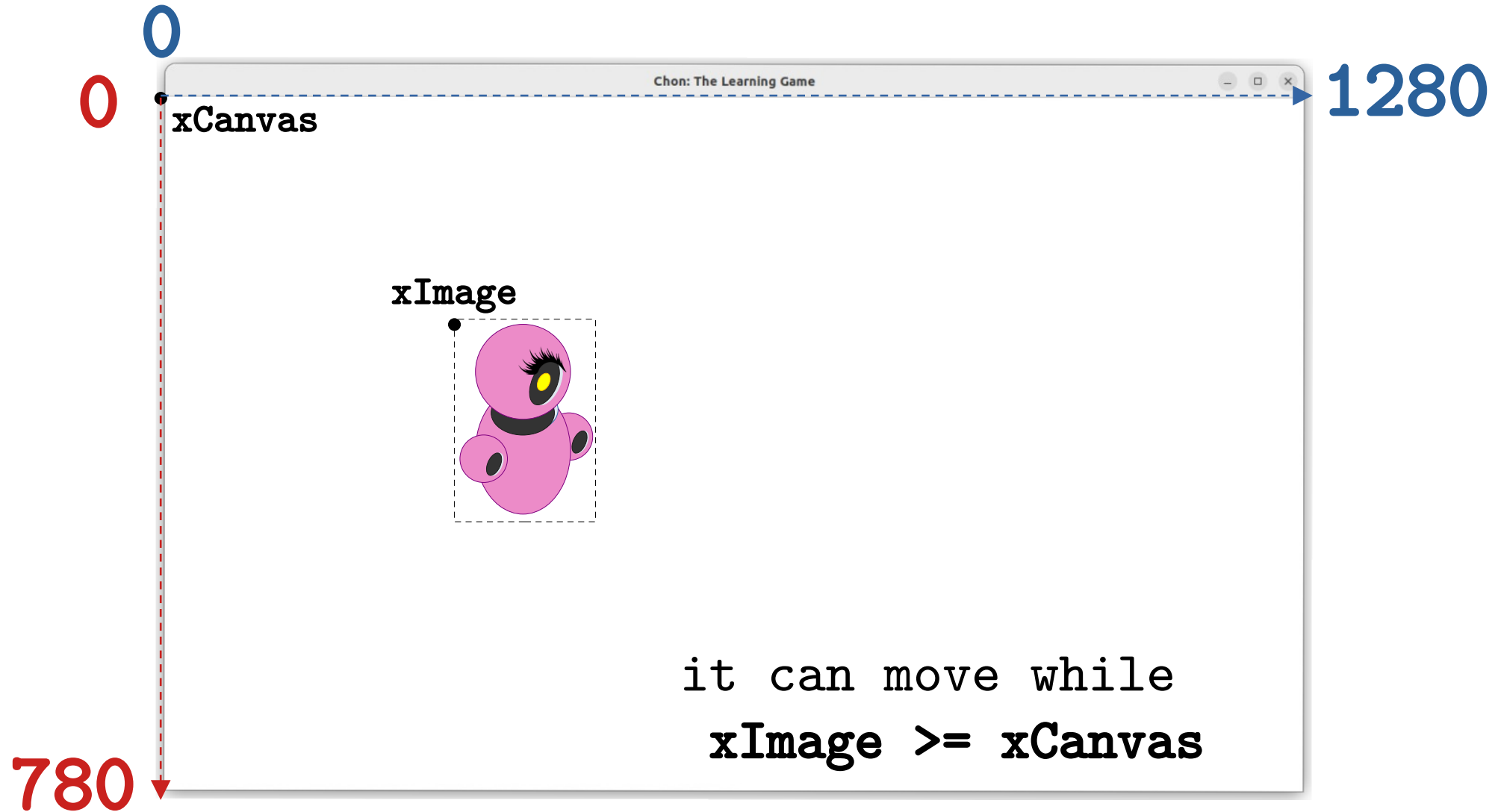
Defining Boundaries at the LEFT



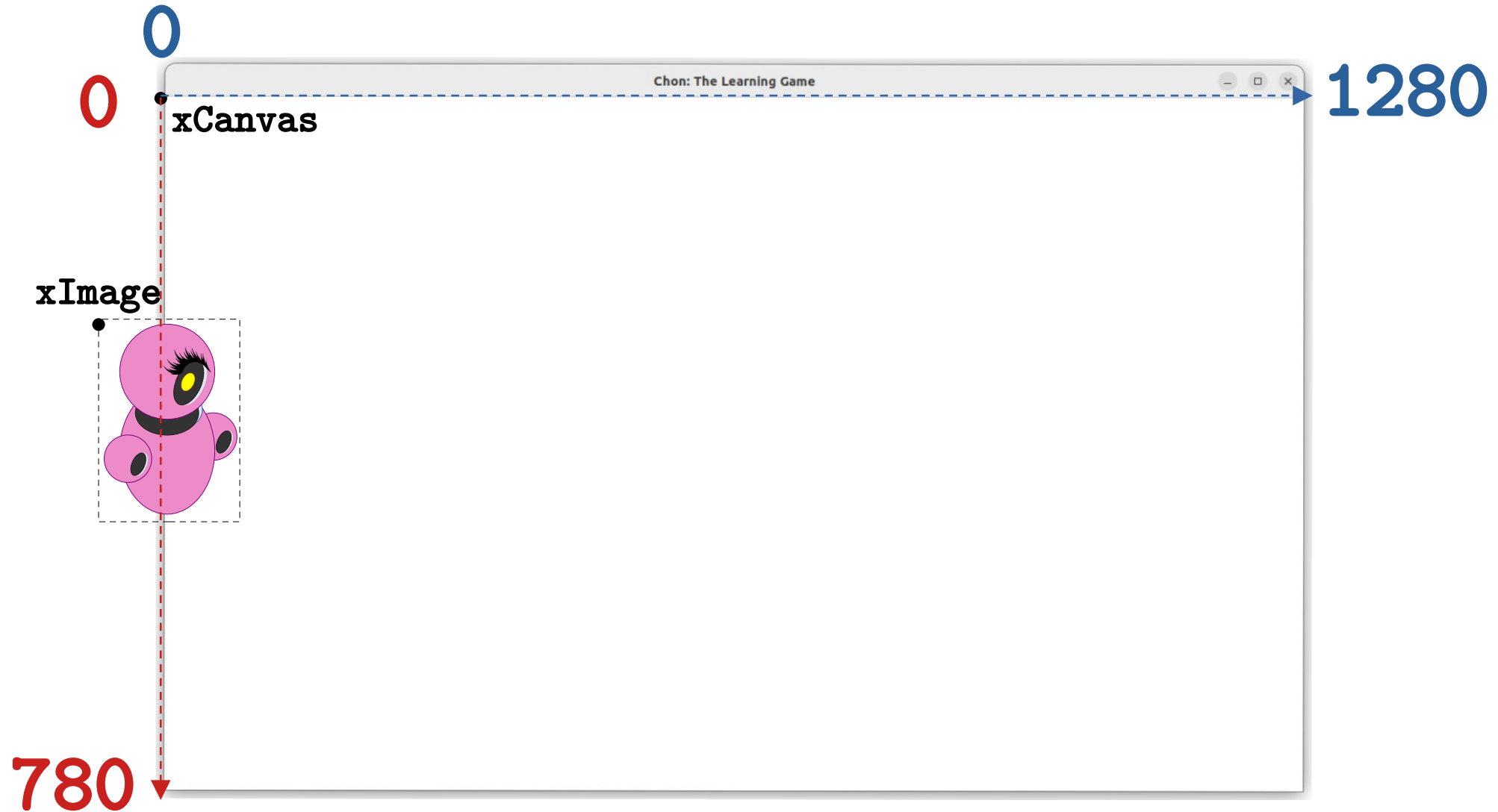
Defining Boundaries at the LEFT



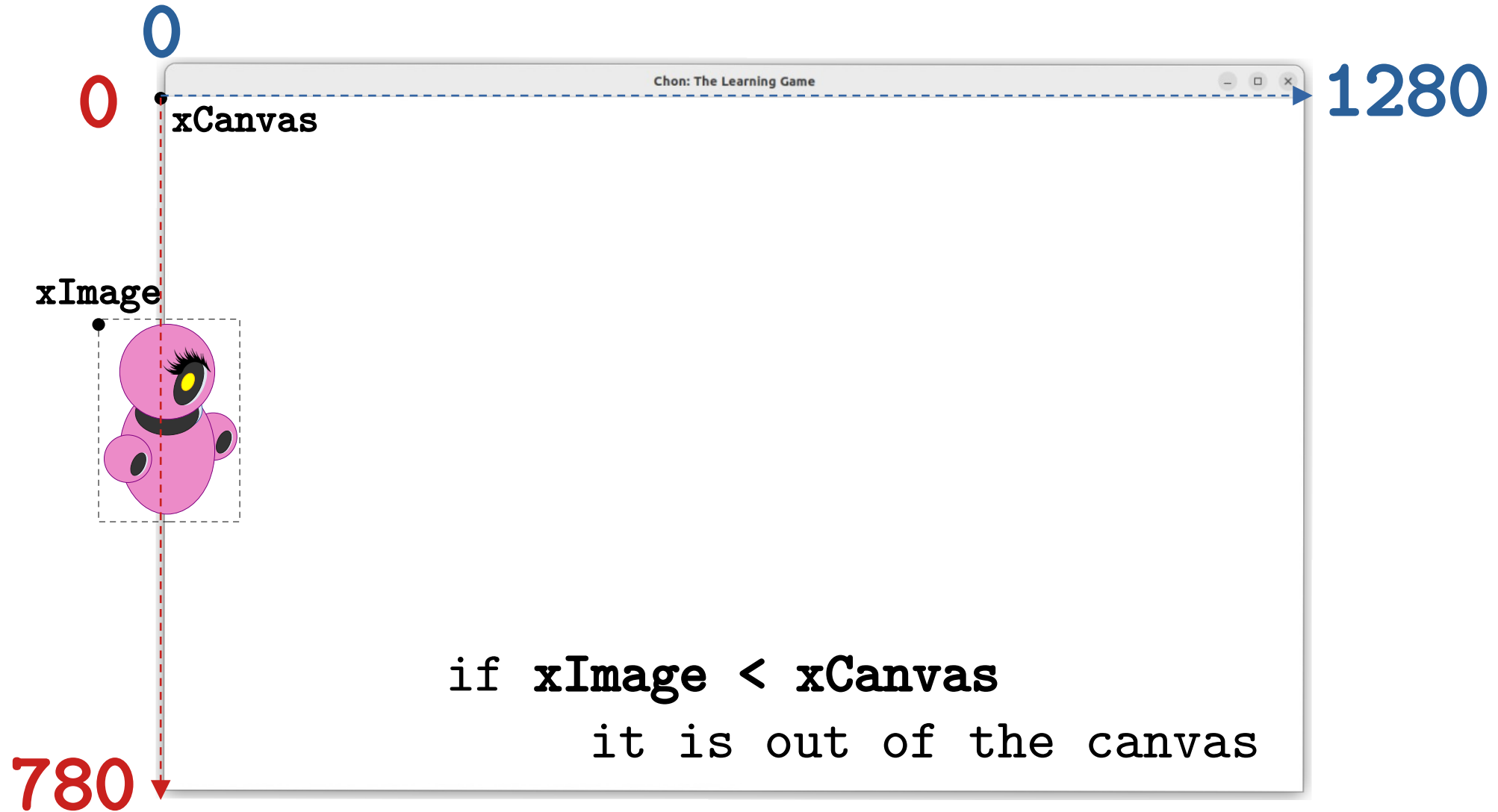
Defining Boundaries at the LEFT



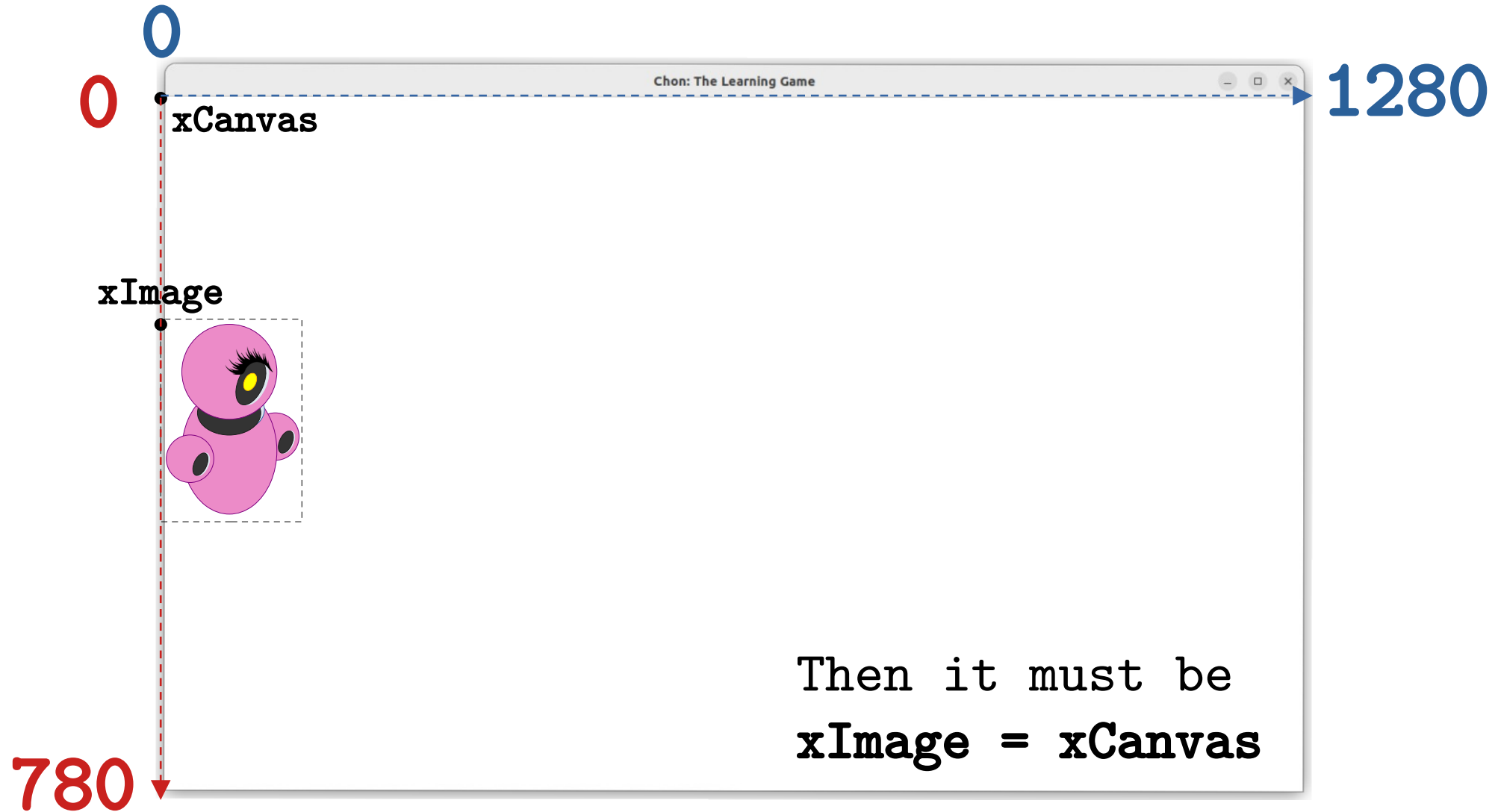
Defining Boundaries at the LEFT



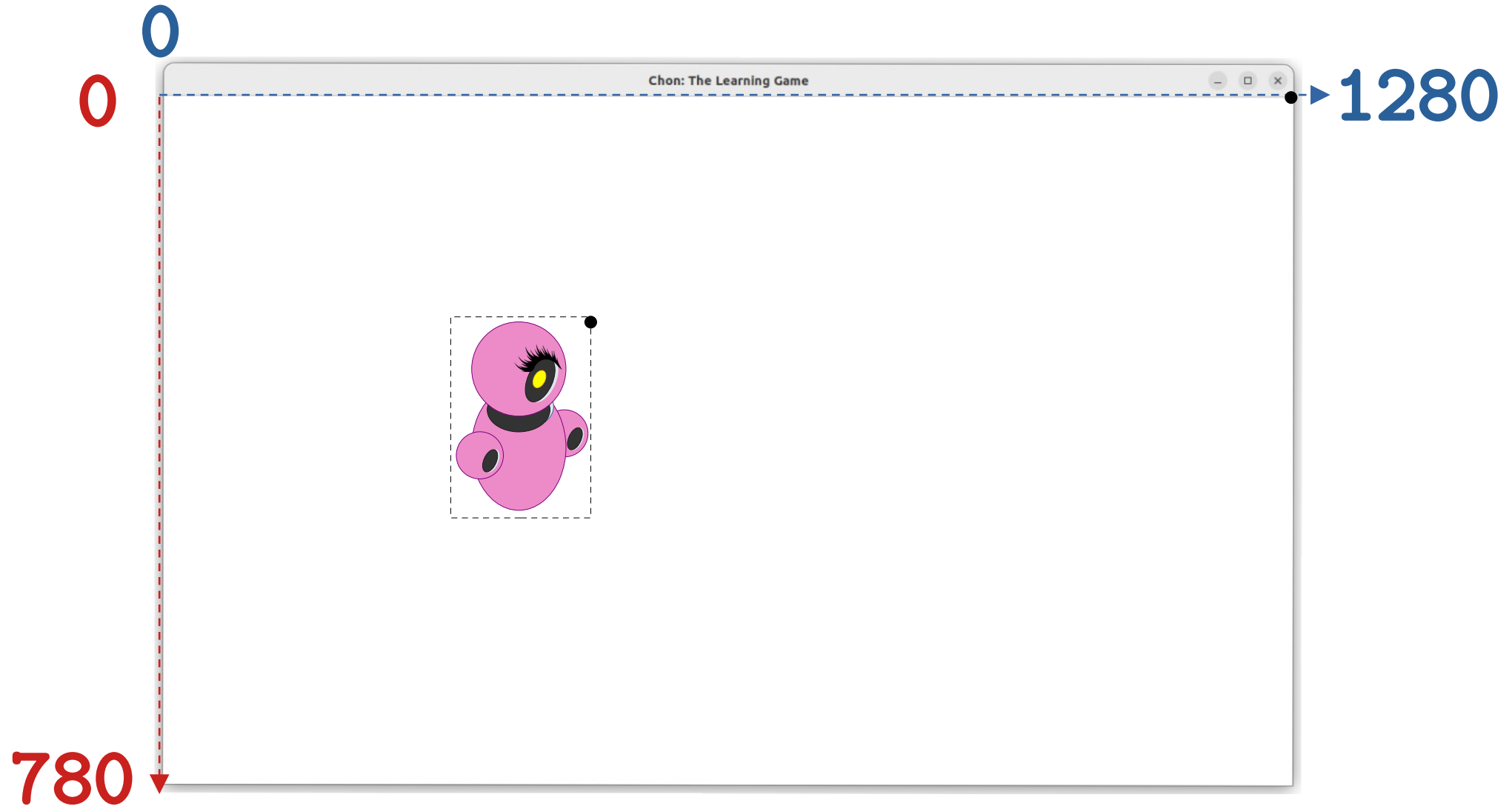
Defining Boundaries at the LEFT



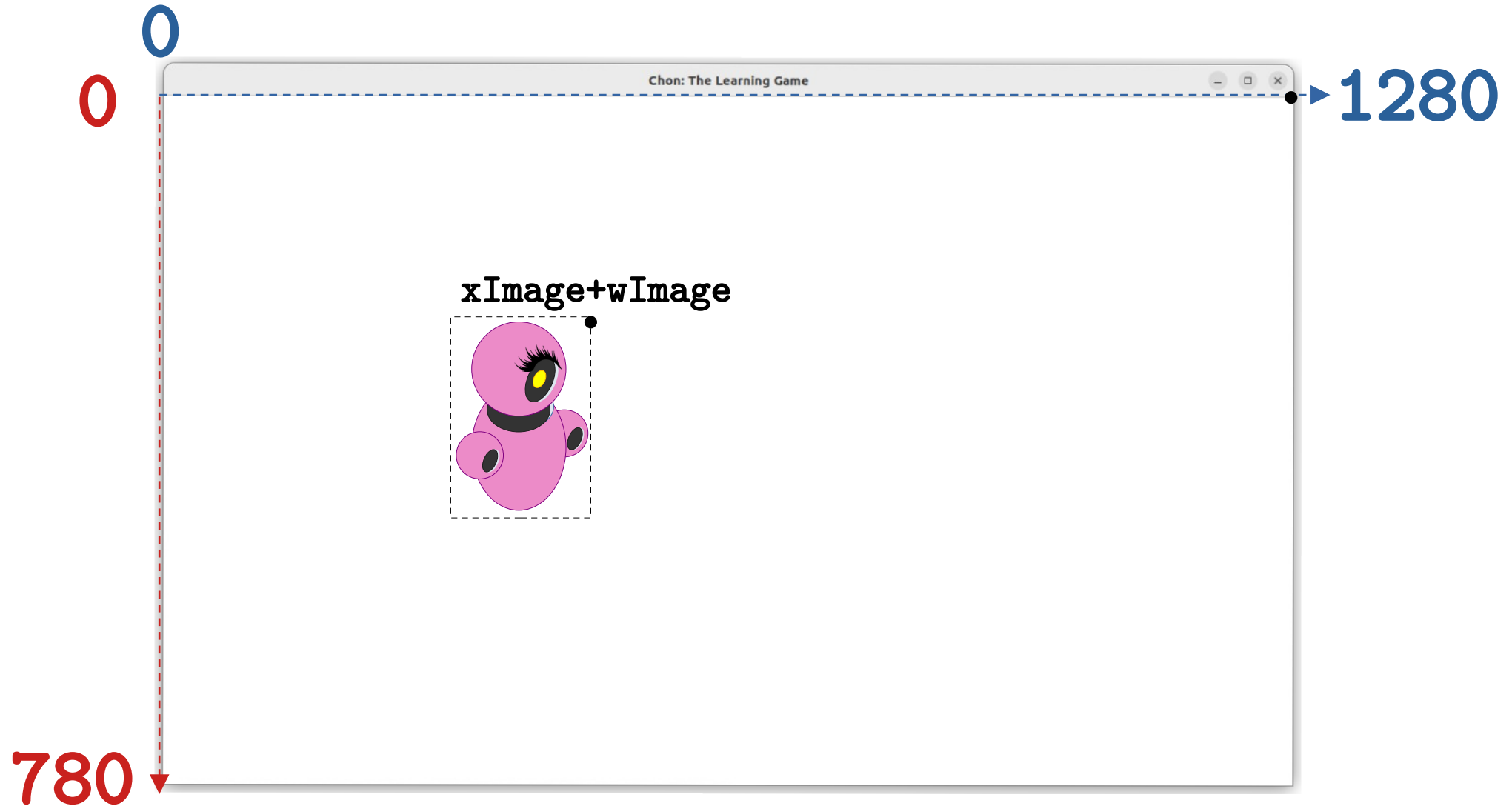
Defining Boundaries at the LEFT



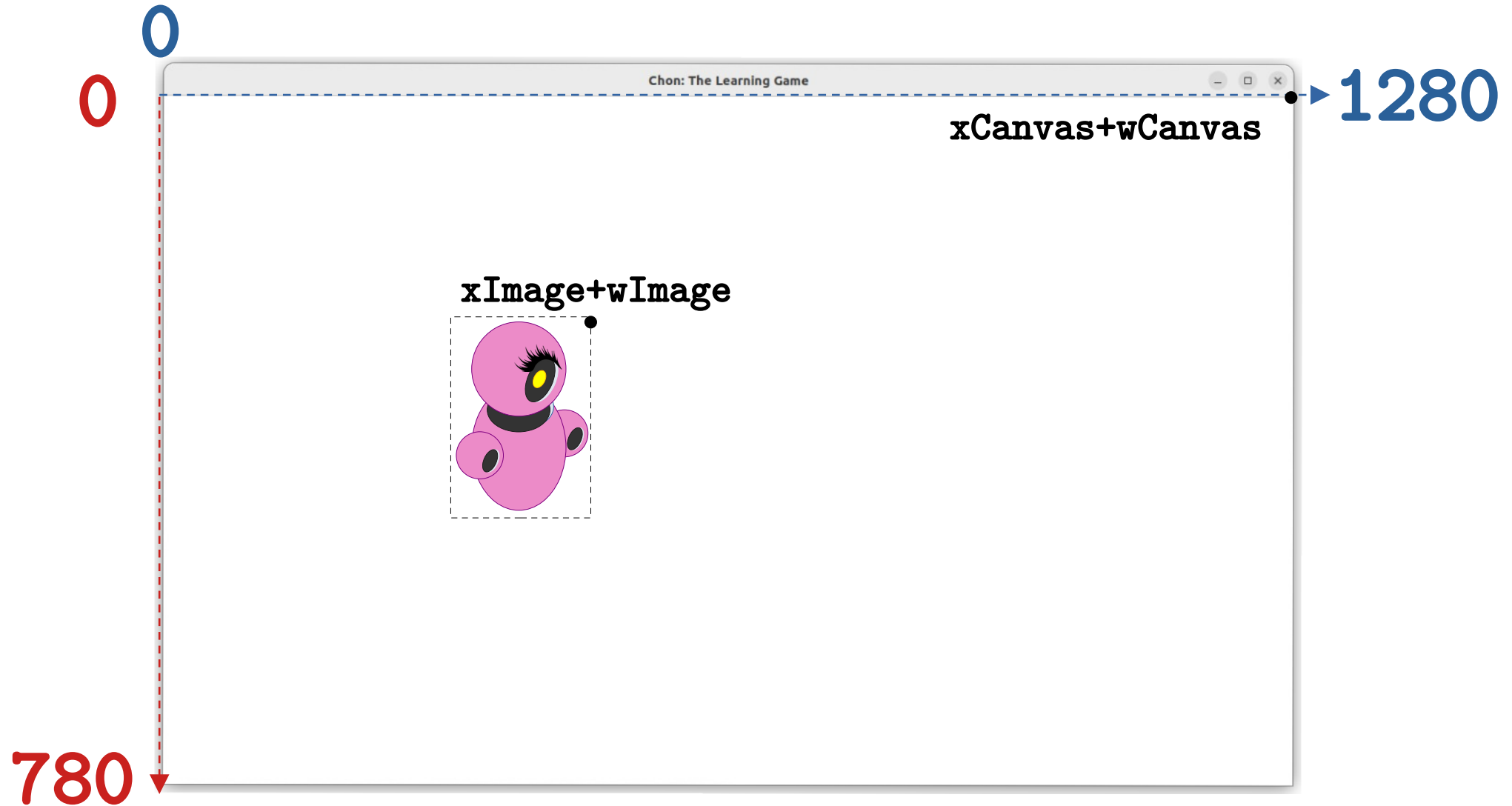
Defining Boundaries at the RIGHT



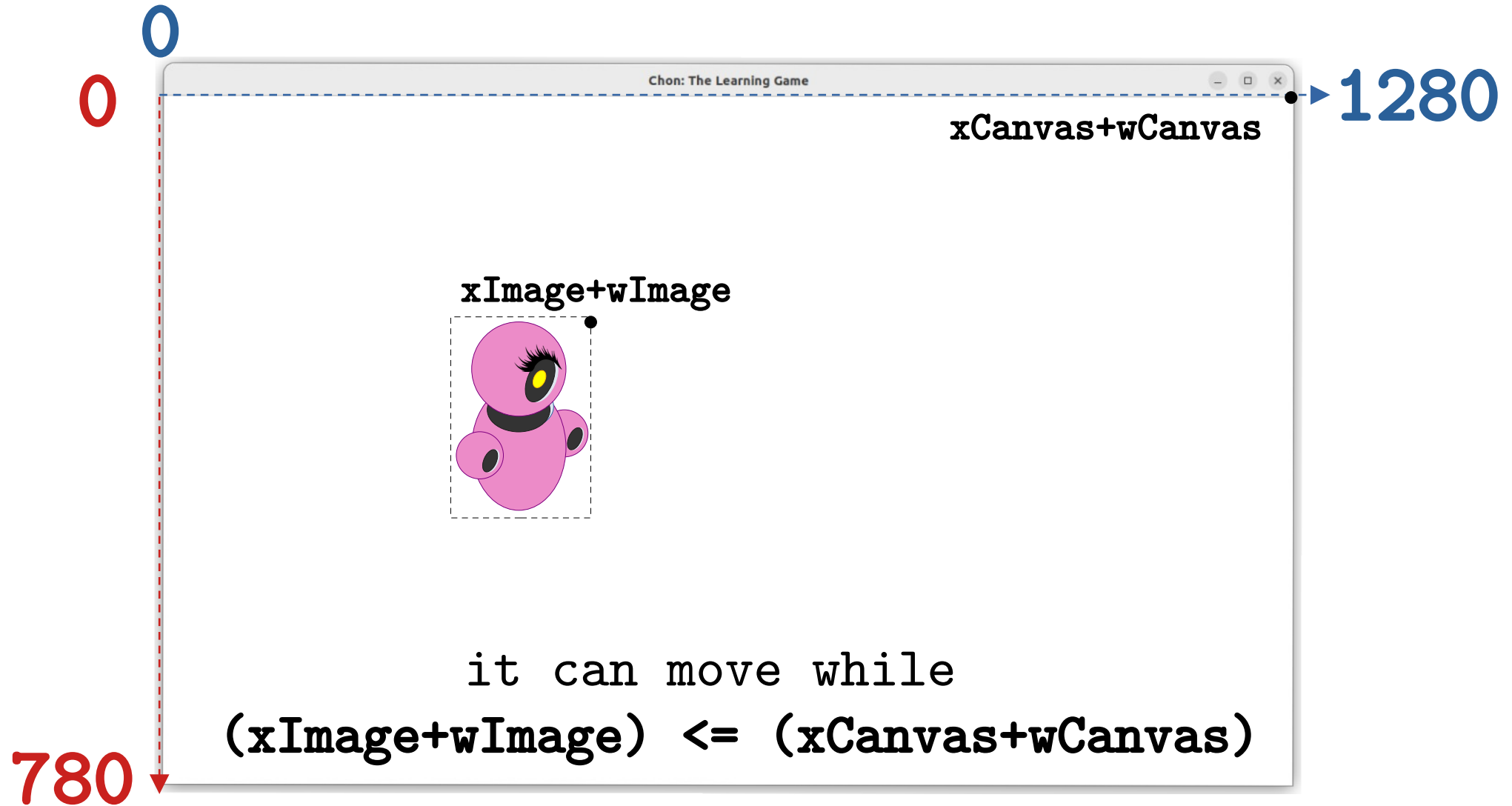
Defining Boundaries at the RIGHT



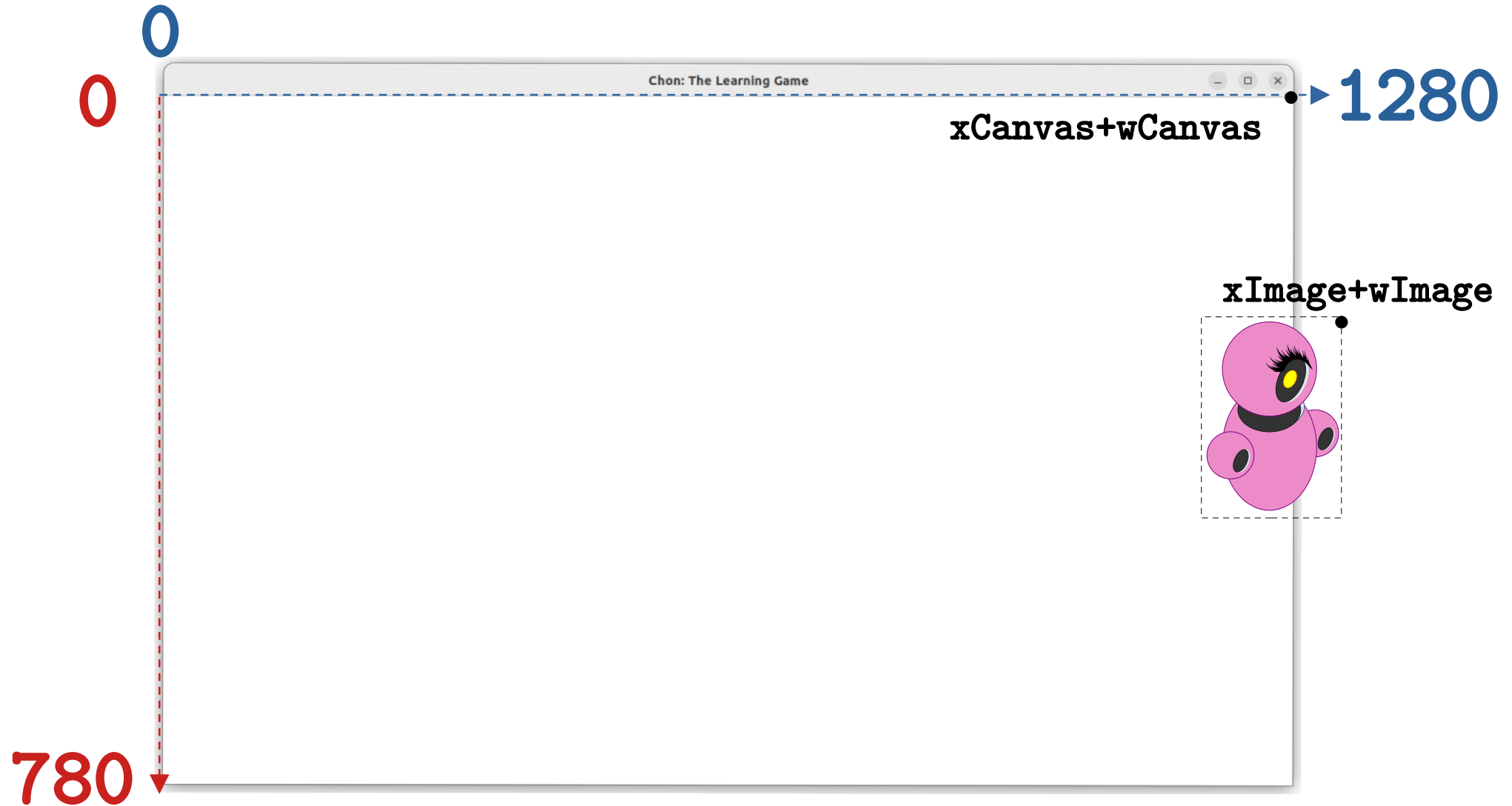
Defining Boundaries at the RIGHT



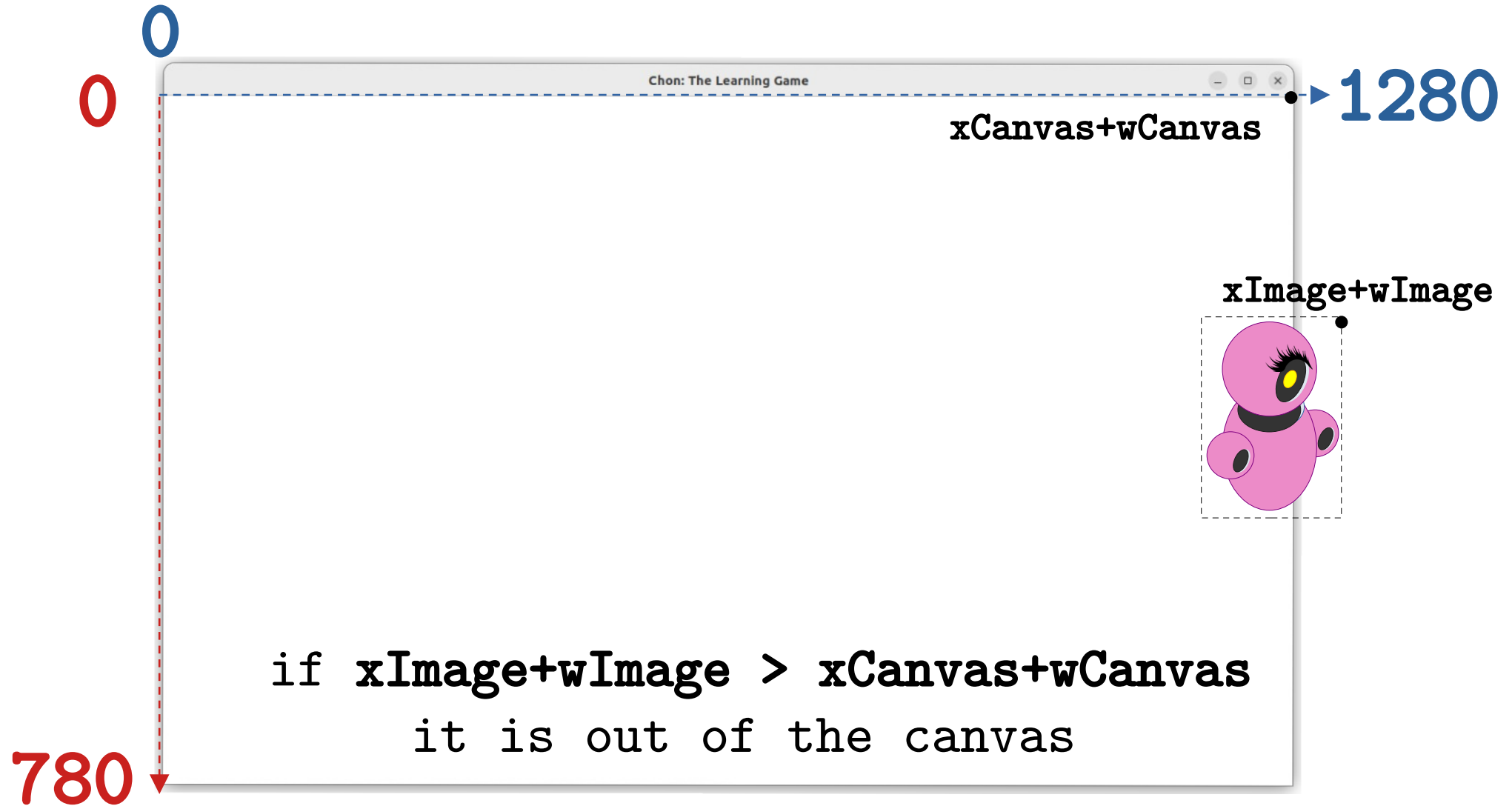
Defining Boundaries at the RIGHT



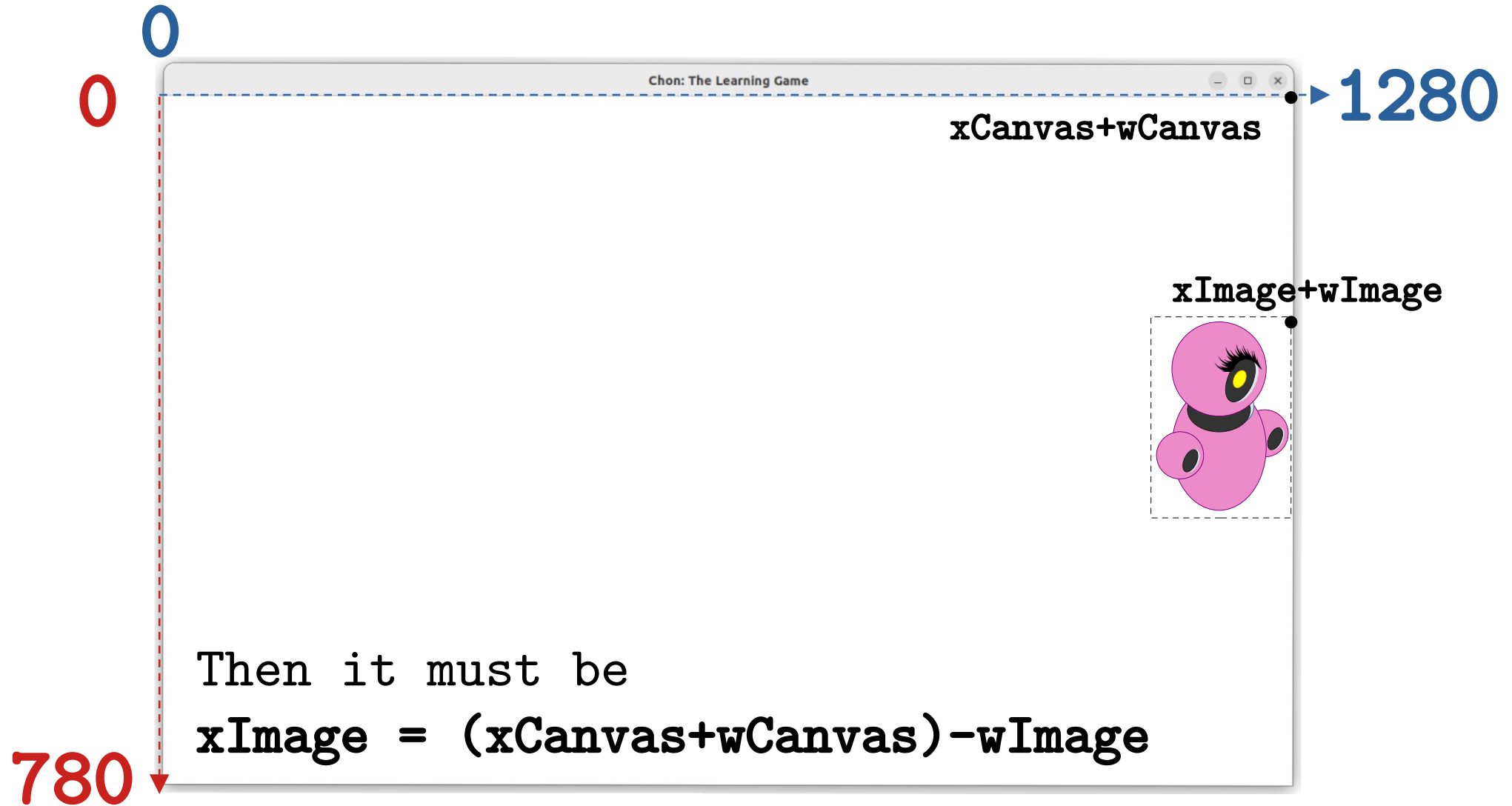
Defining Boundaries at the RIGHT



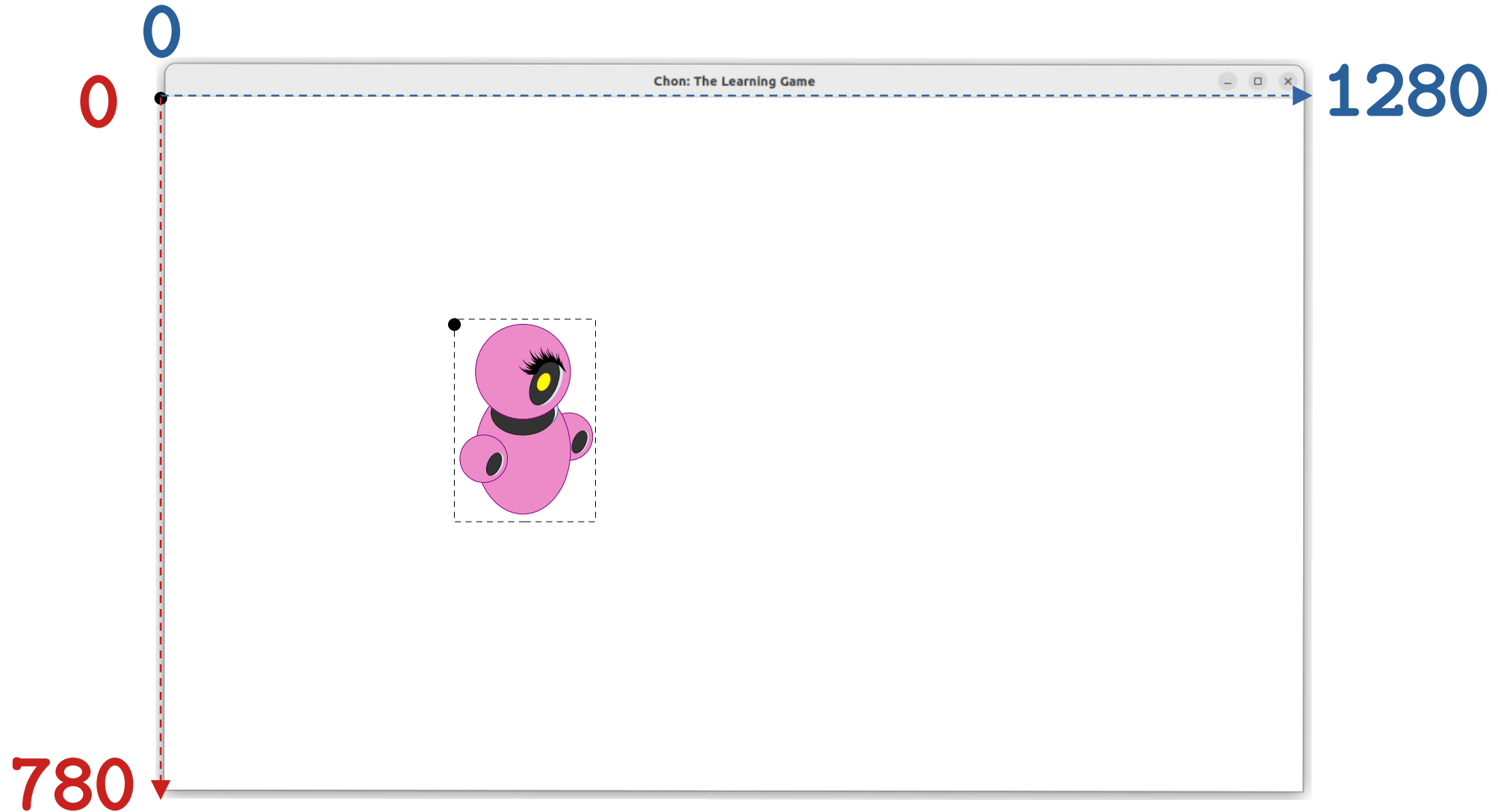
Defining Boundaries at the RIGHT



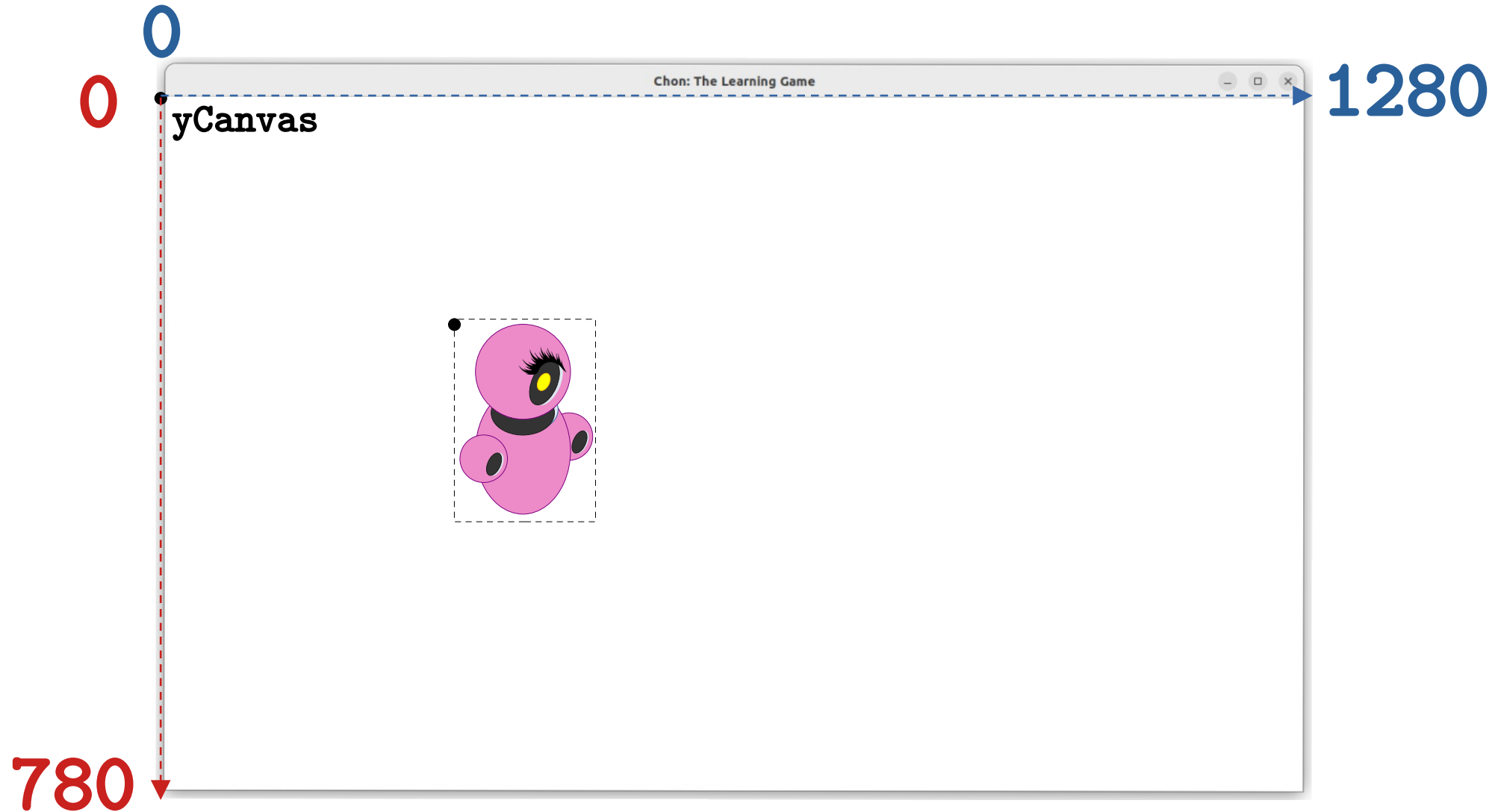
Defining Boundaries at the RIGHT



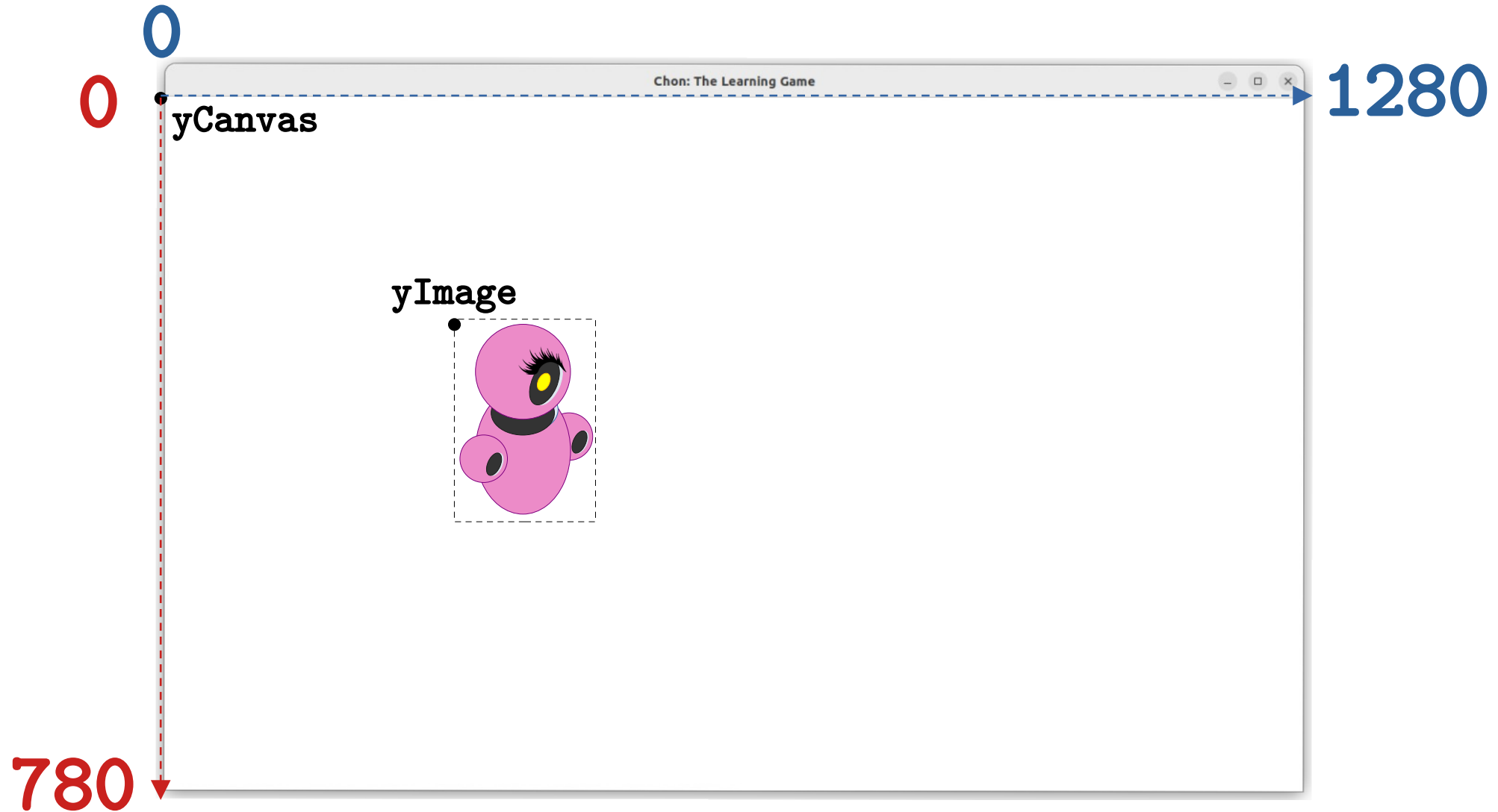
Defining Boundaries at the TOP



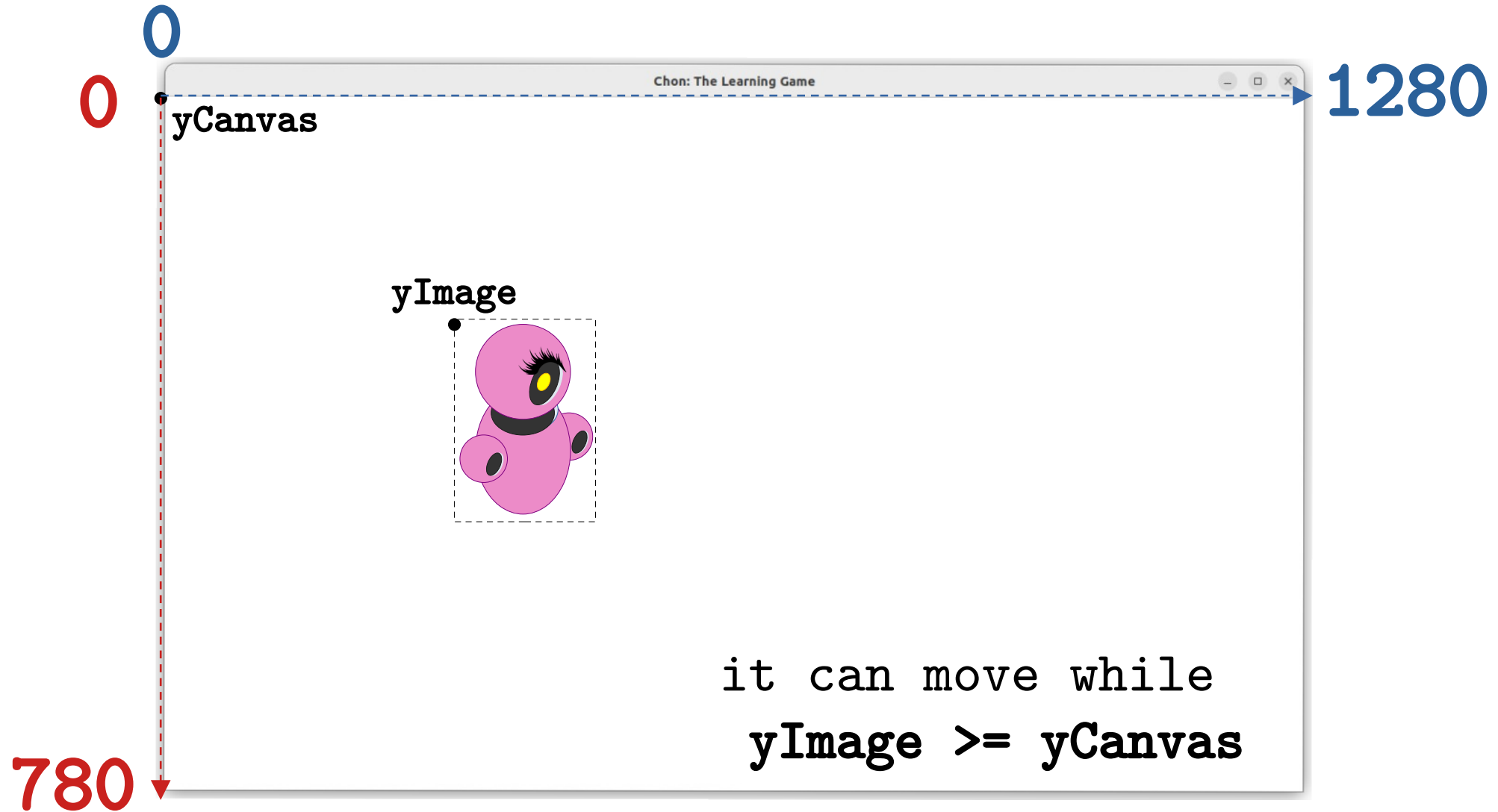
Defining Boundaries at the TOP



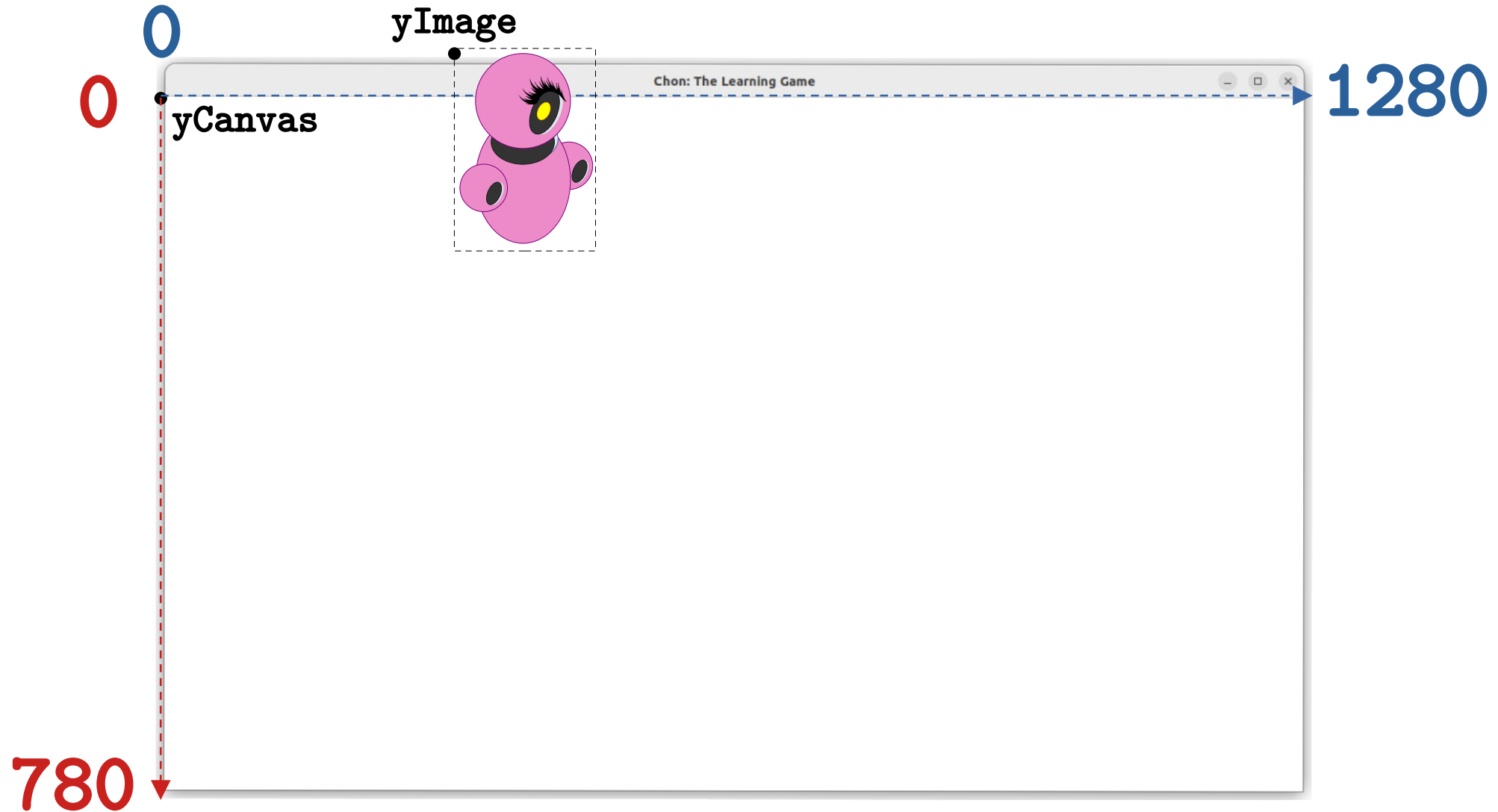
Defining Boundaries at the TOP



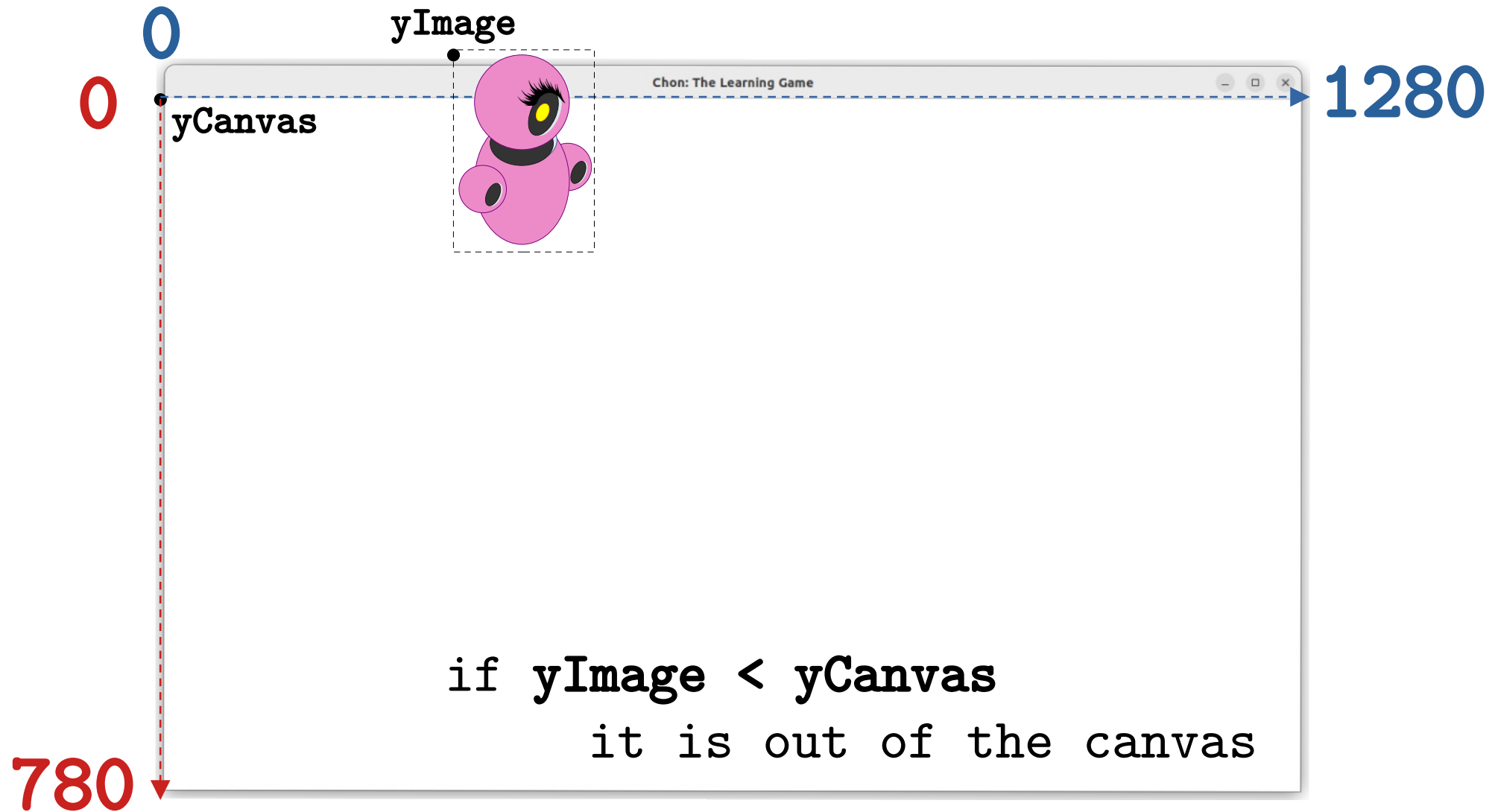
Defining Boundaries at the TOP



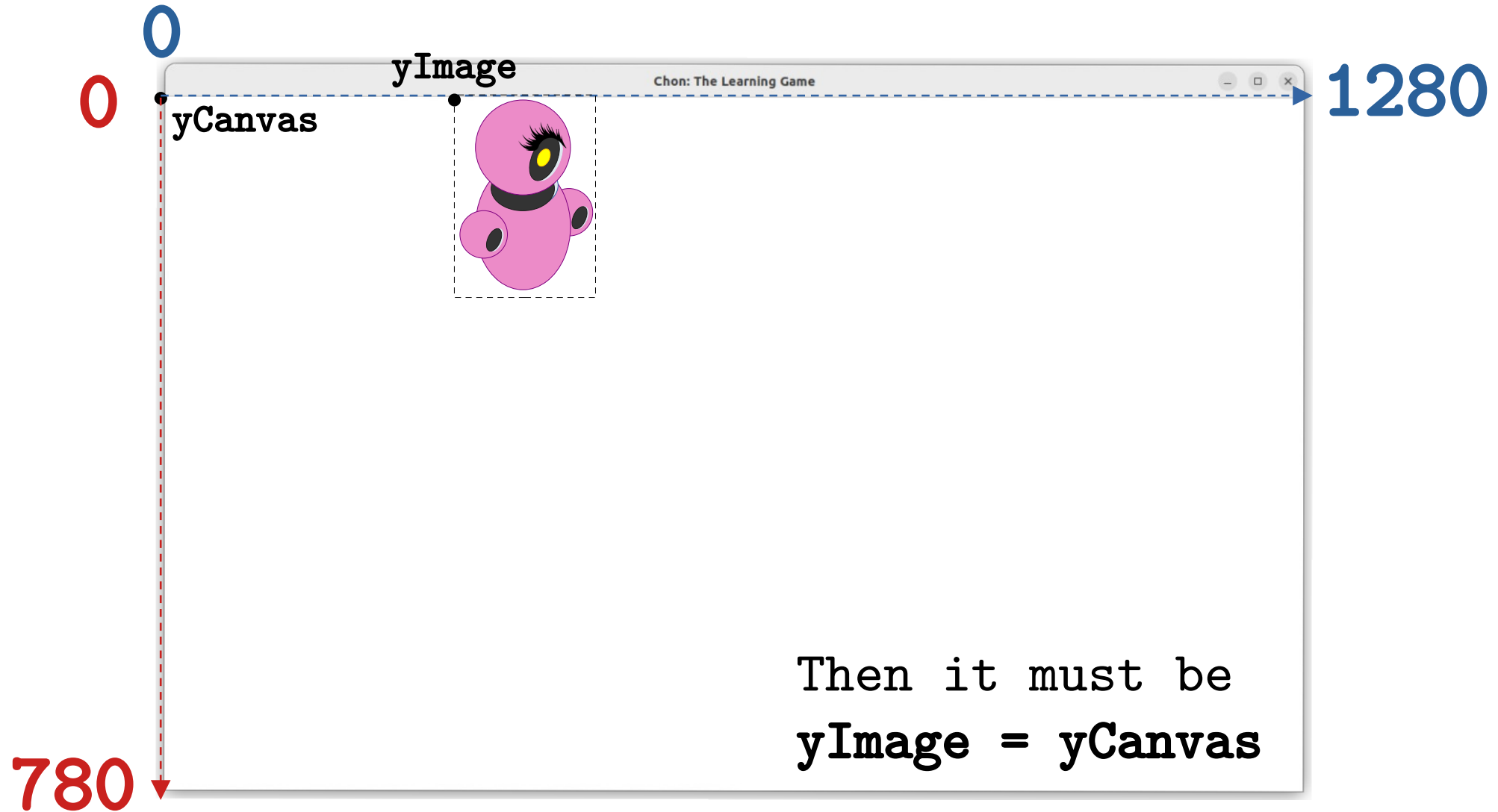
Defining Boundaries at the TOP



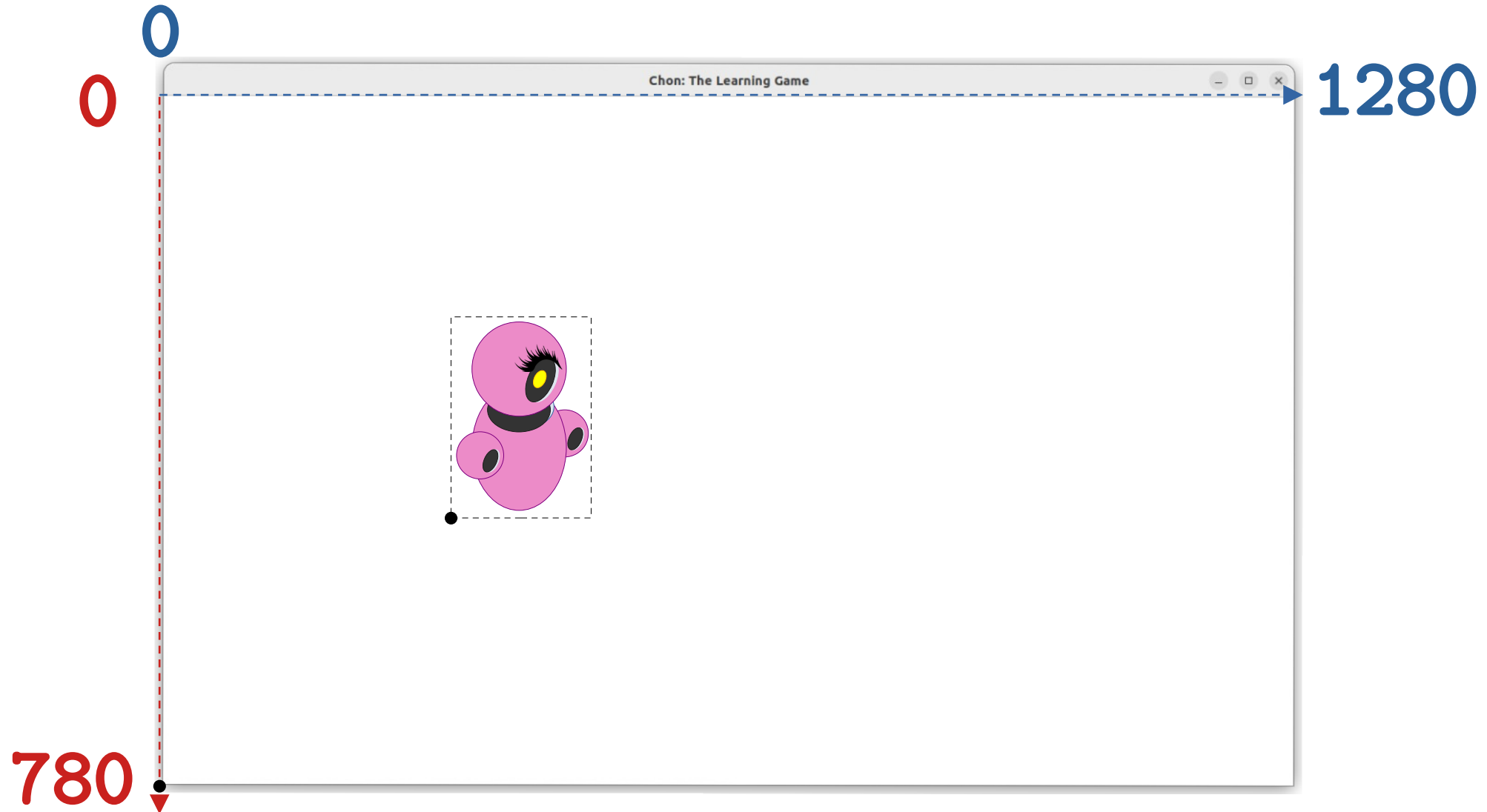
Defining Boundaries at the TOP



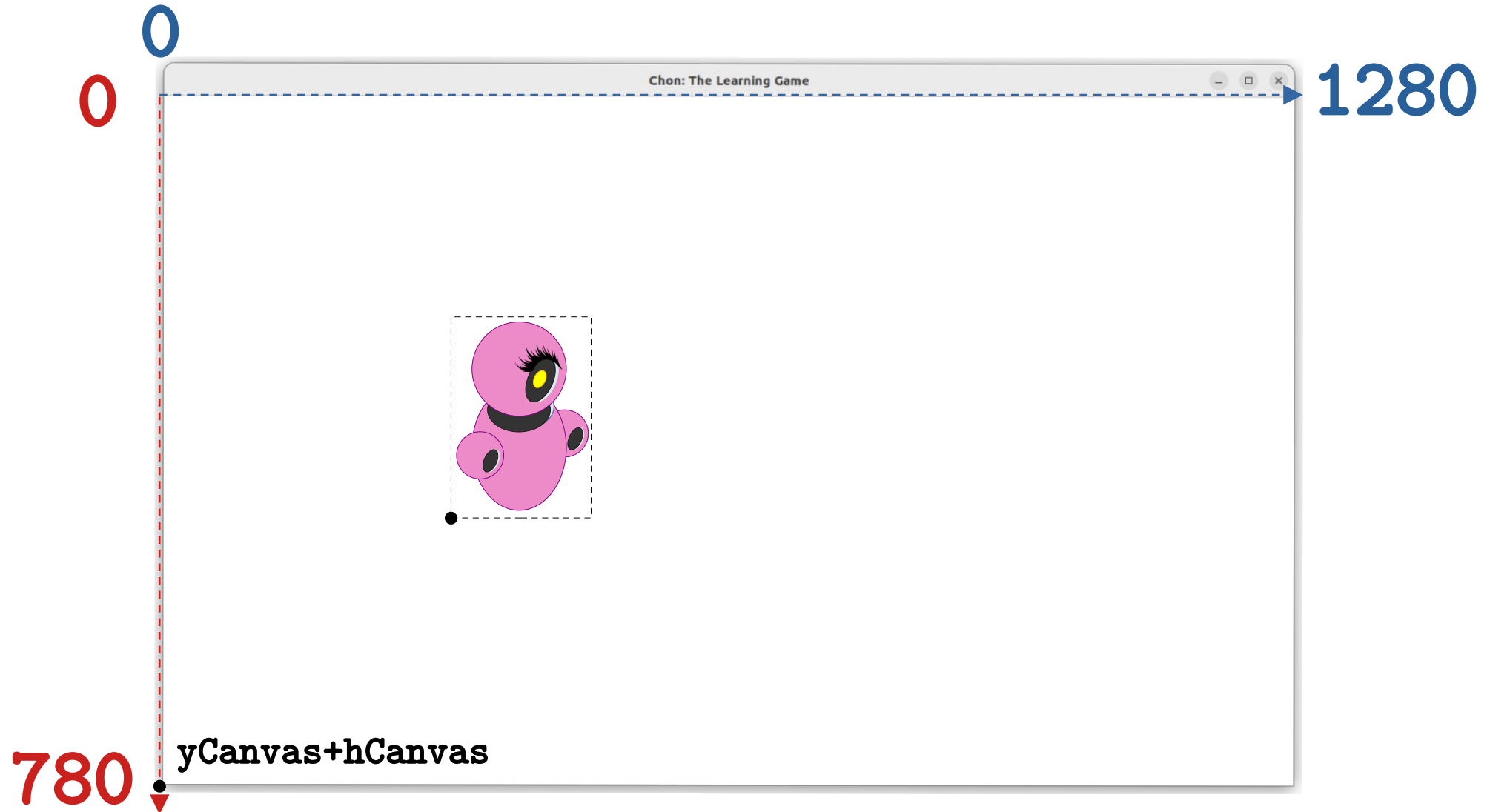
Defining Boundaries at the TOP



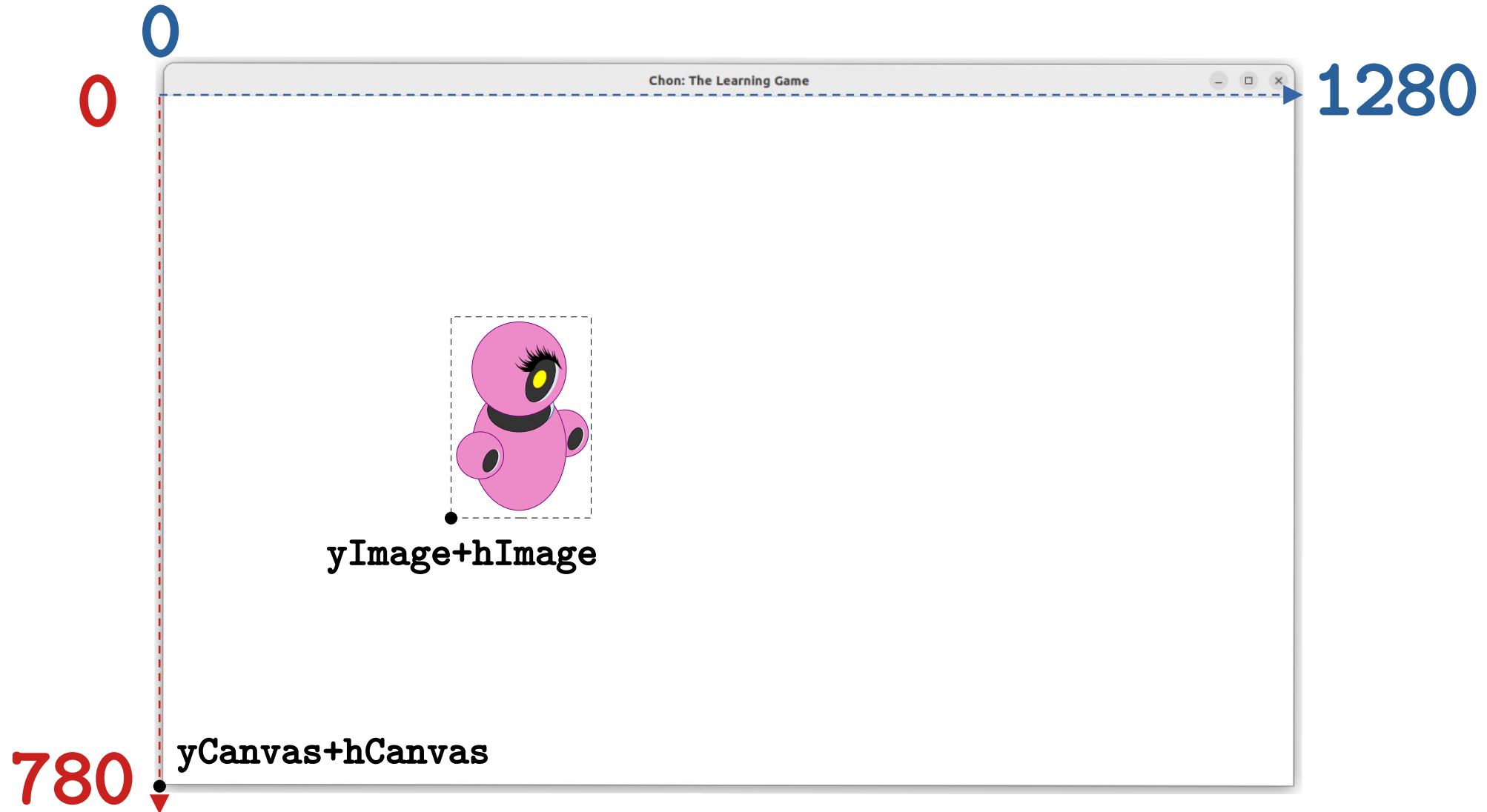
Defining Boundaries at the BOTTOM



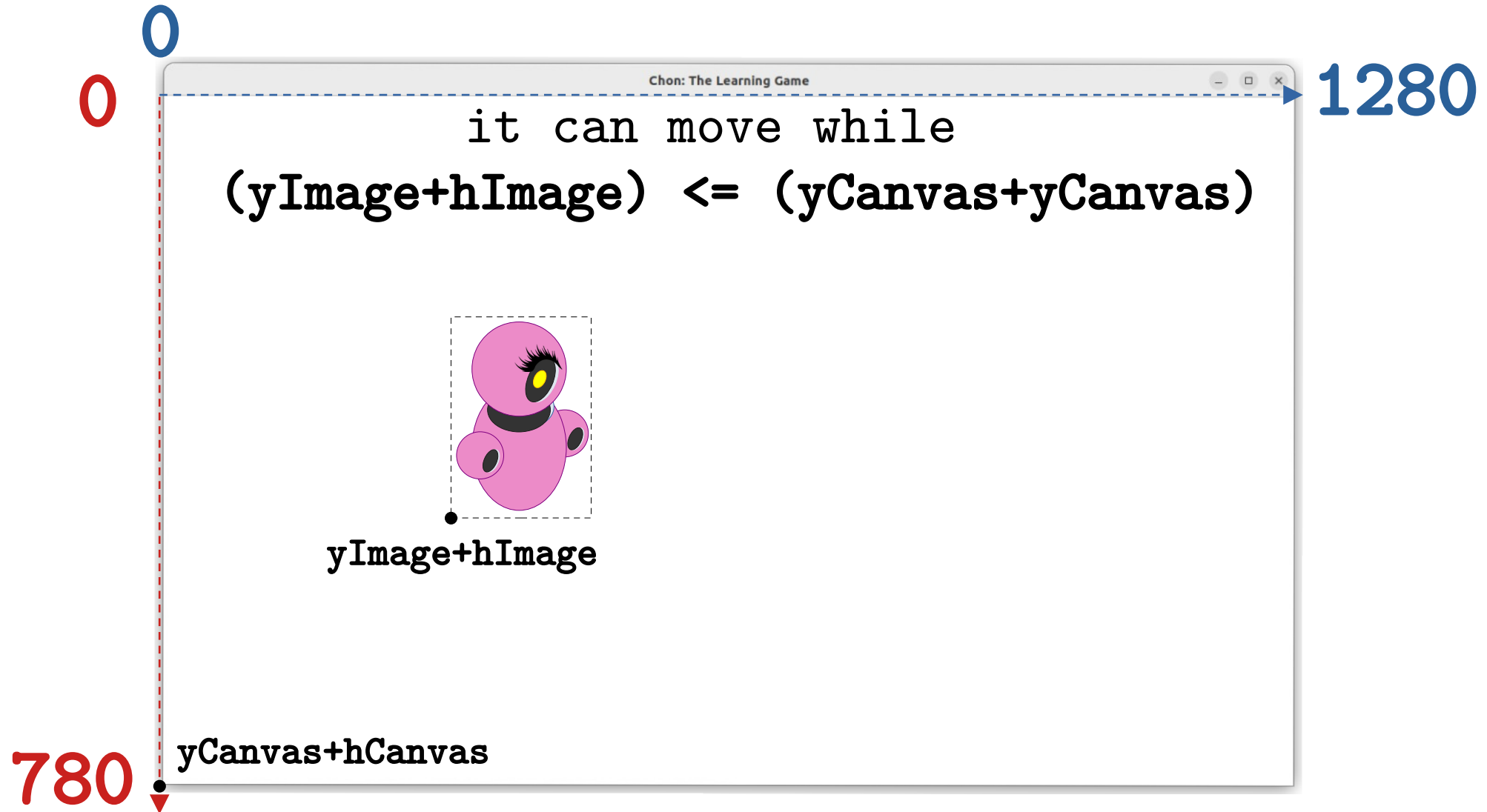
Defining Boundaries at the BOTTOM



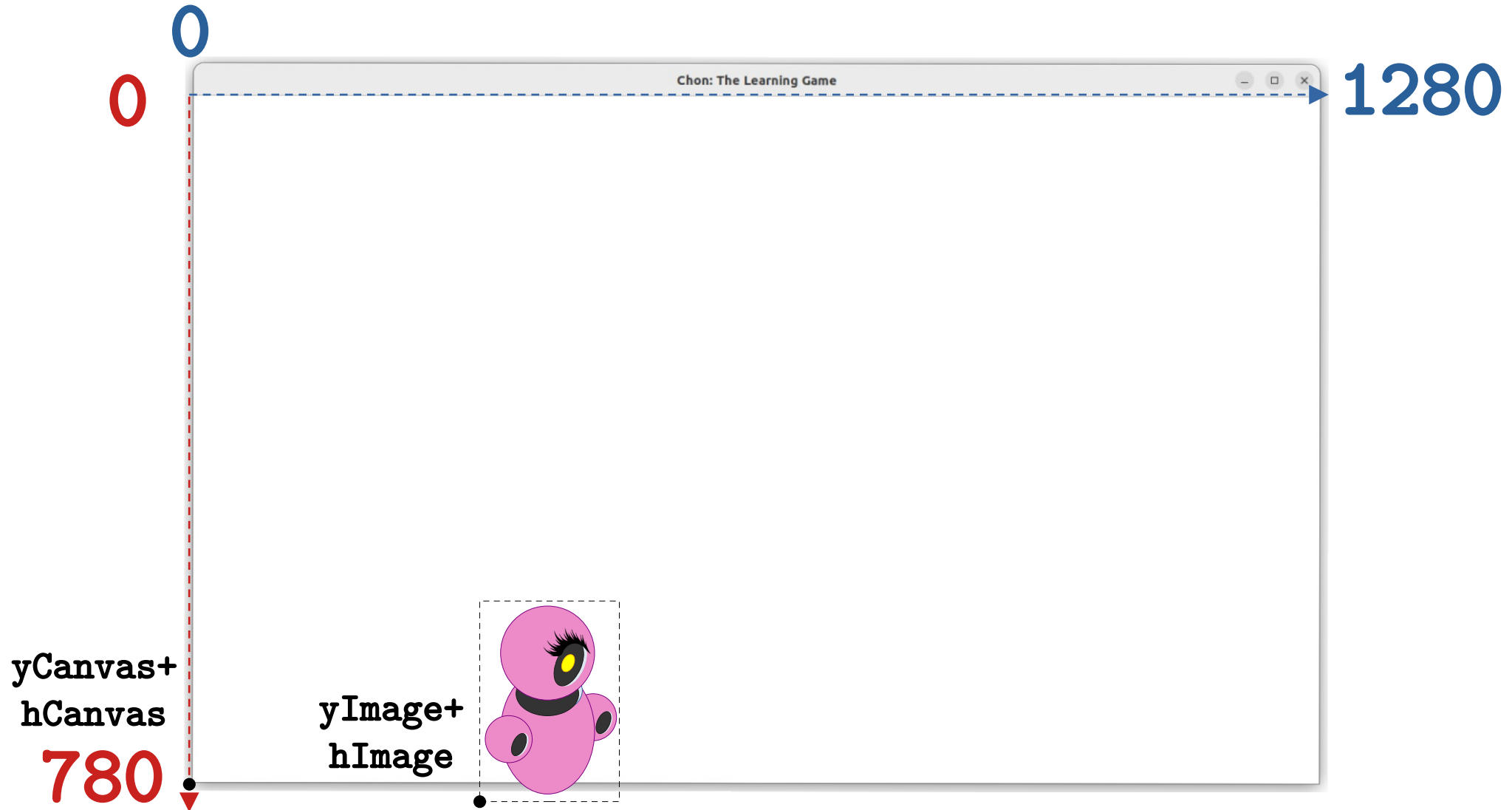
Defining Boundaries at the BOTTOM



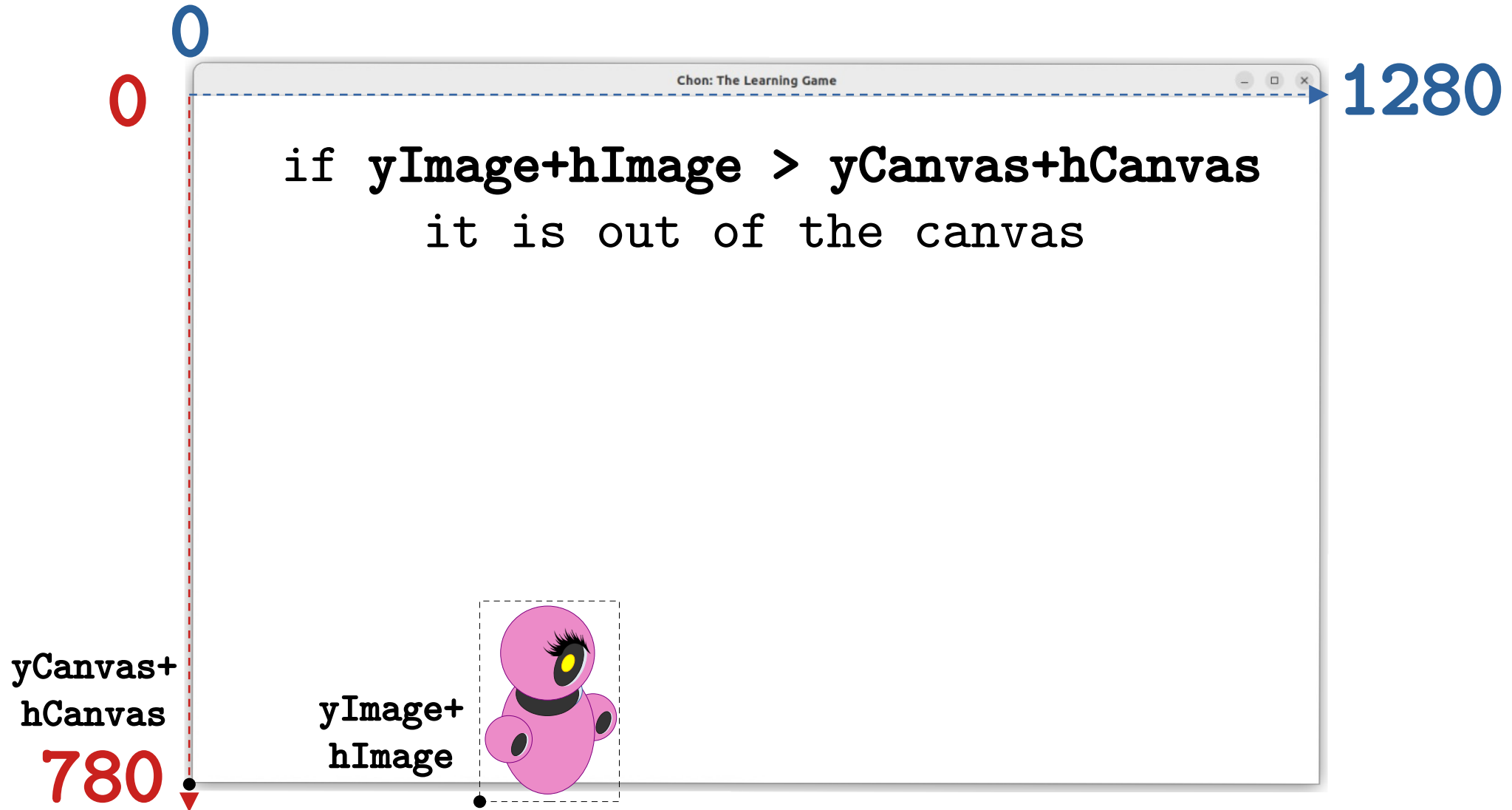
Defining Boundaries at the BOTTOM



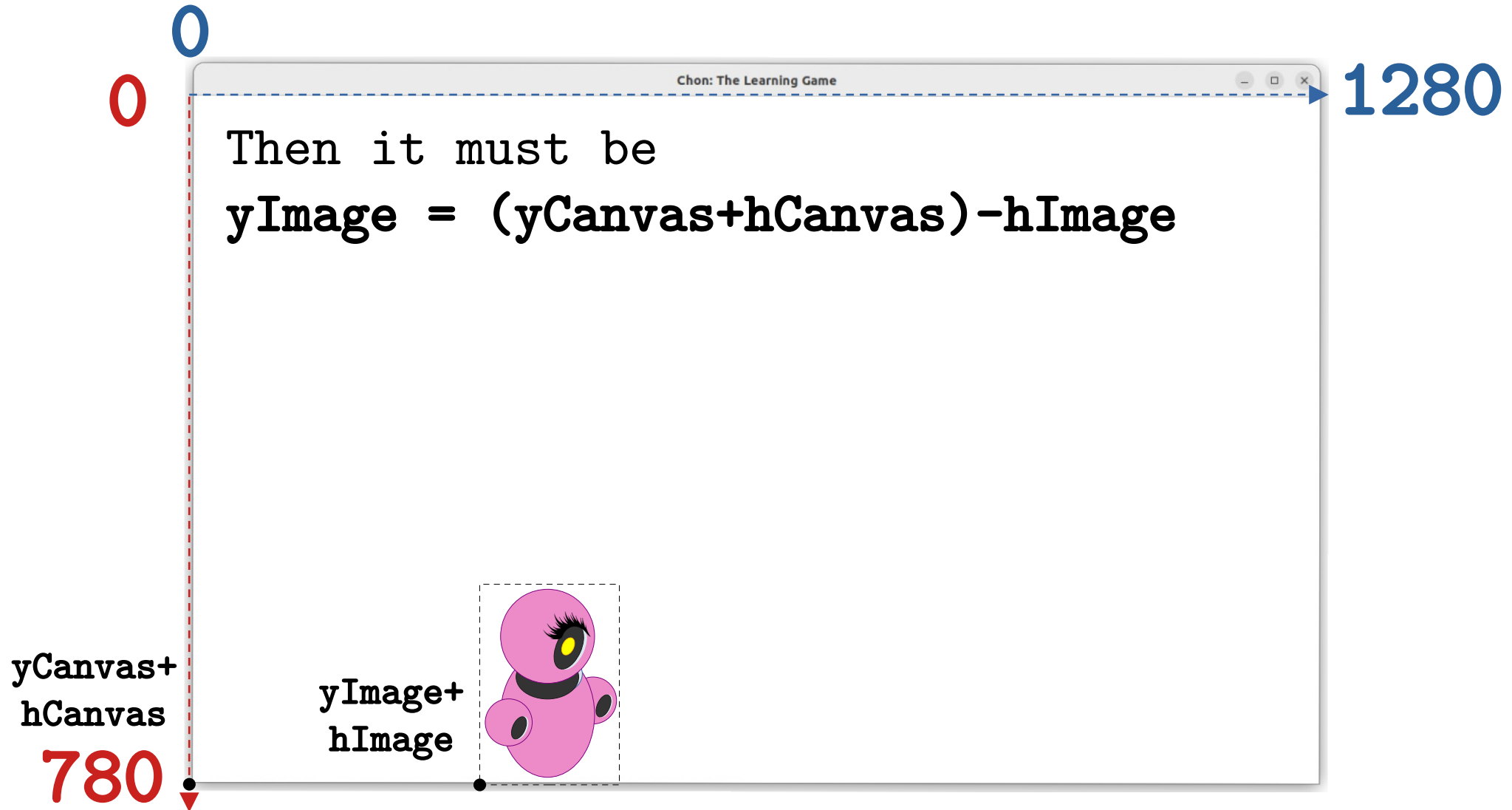
Defining Boundaries at the BOTTOM



Defining Boundaries at the BOTTOM



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Printing a Status Panel



Printing a Status Panel

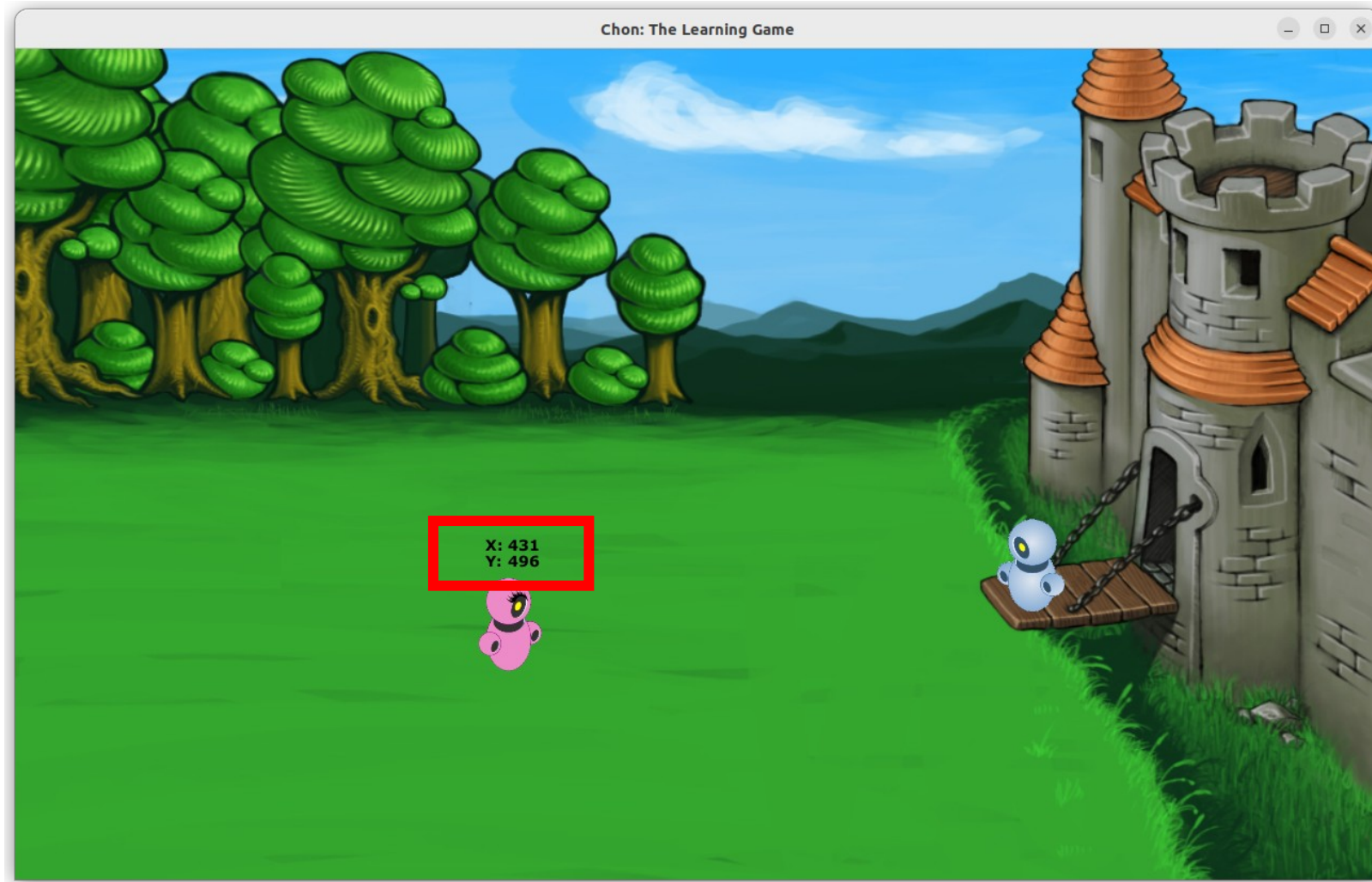


Image Overlapping

The order in which you place the **Image** matters.

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```
gc.drawImage(chonBot, x:920, y:440, wImageBot, hImageBot);  
gc.drawImage(chonBota, x:400, y:390, wImageBot, hImageBot);
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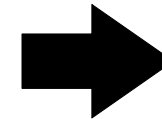


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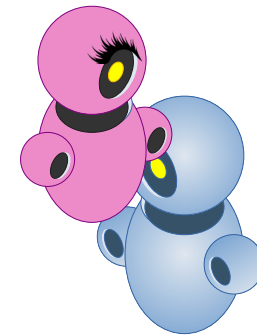
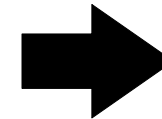


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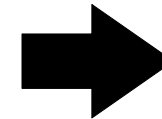


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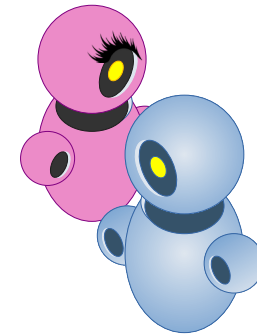
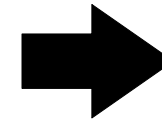


Image Overlapping

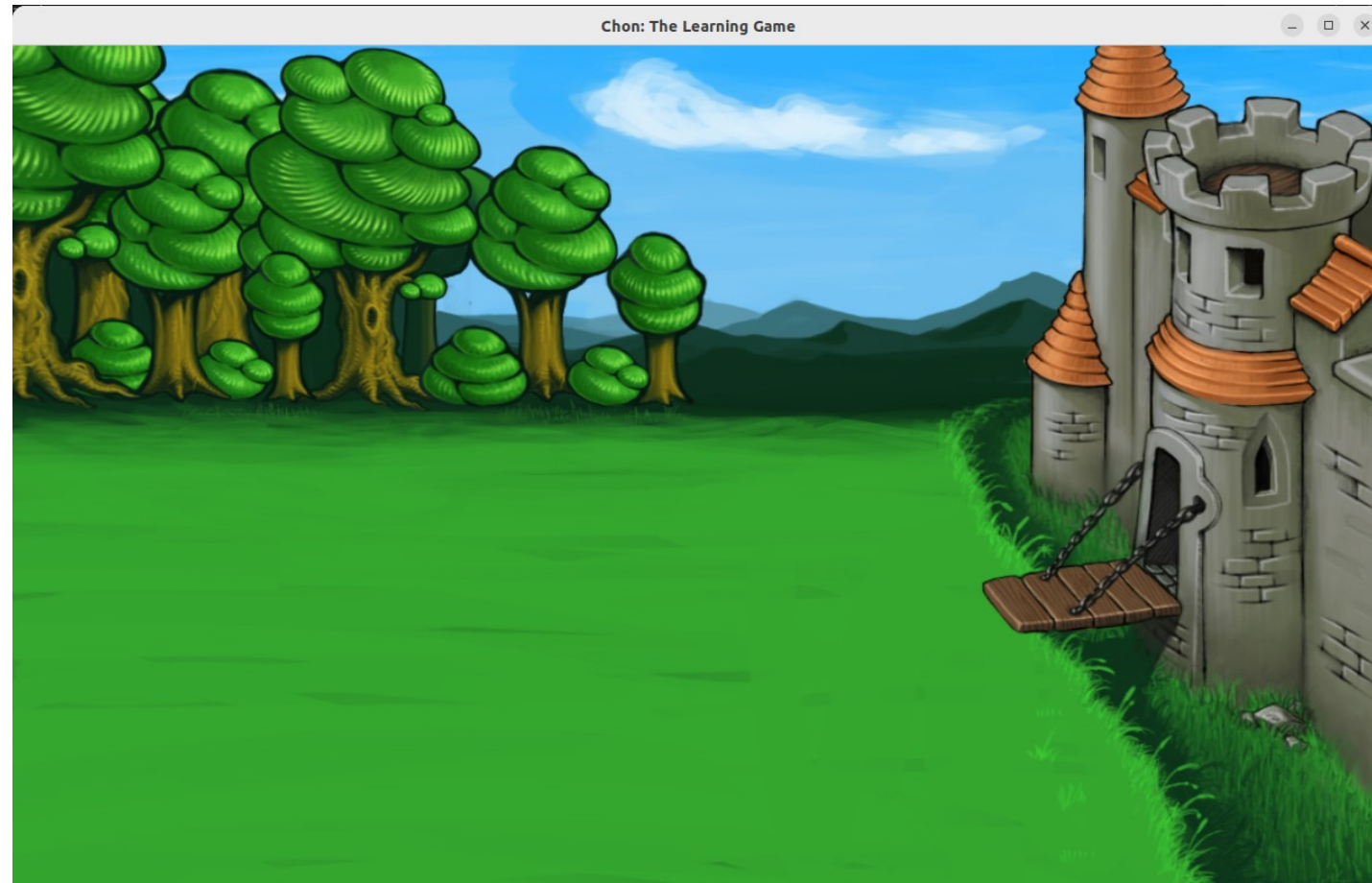


Image Overlapping

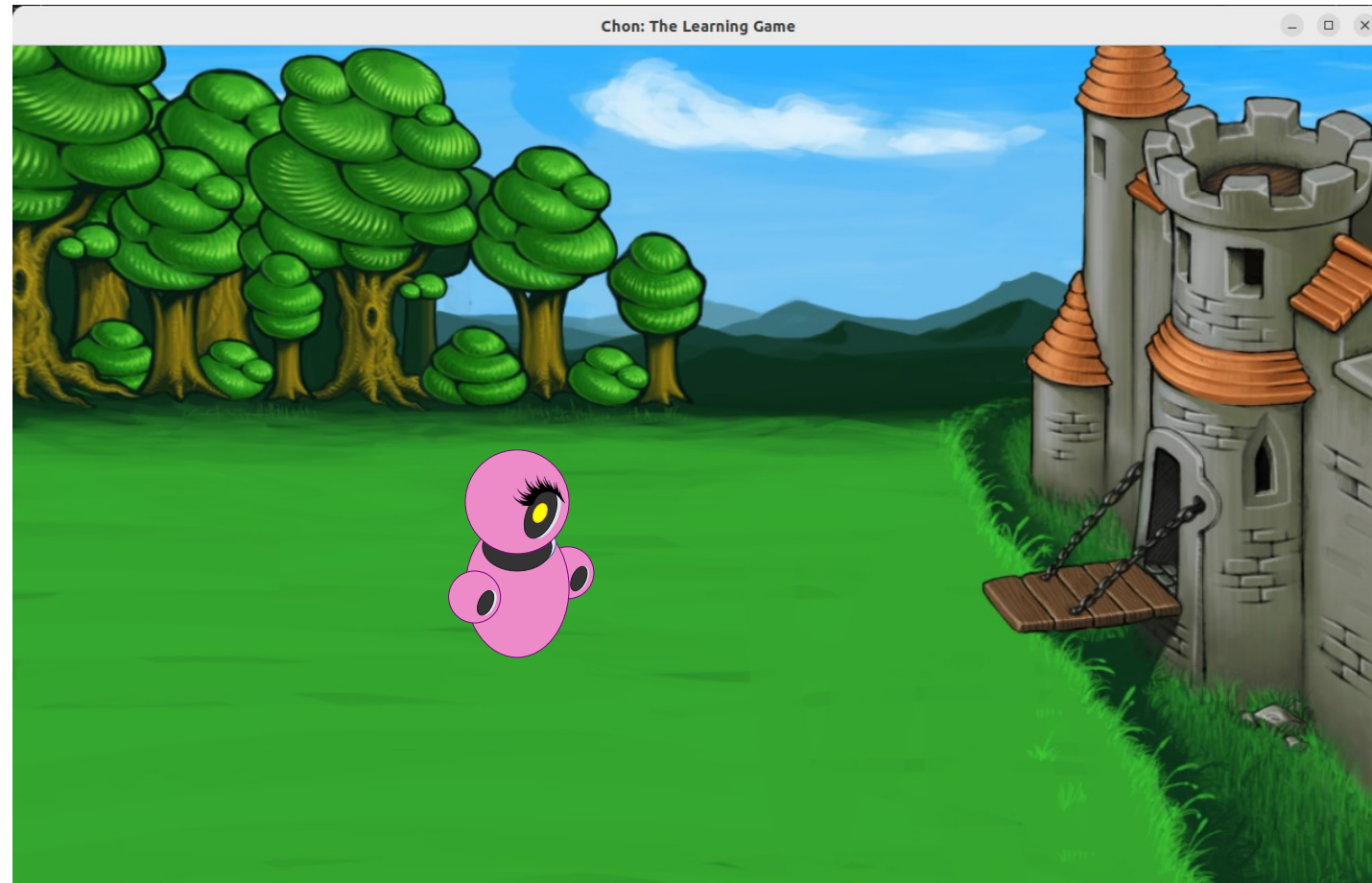


Image Overlapping

