

Project 1: Pokémon RPG (寶可夢)

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Outline

- Introduction
- Basic requirements
- Bonus
- File hierarchy
- README vs. Report
- Grading policy
- Reference

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Introduction

- Role-playing game (RPG)
- Be a Pokémon Trainer and explore the Pokémon world
- Use Pokémon to participate in turn-based battles



Introduction

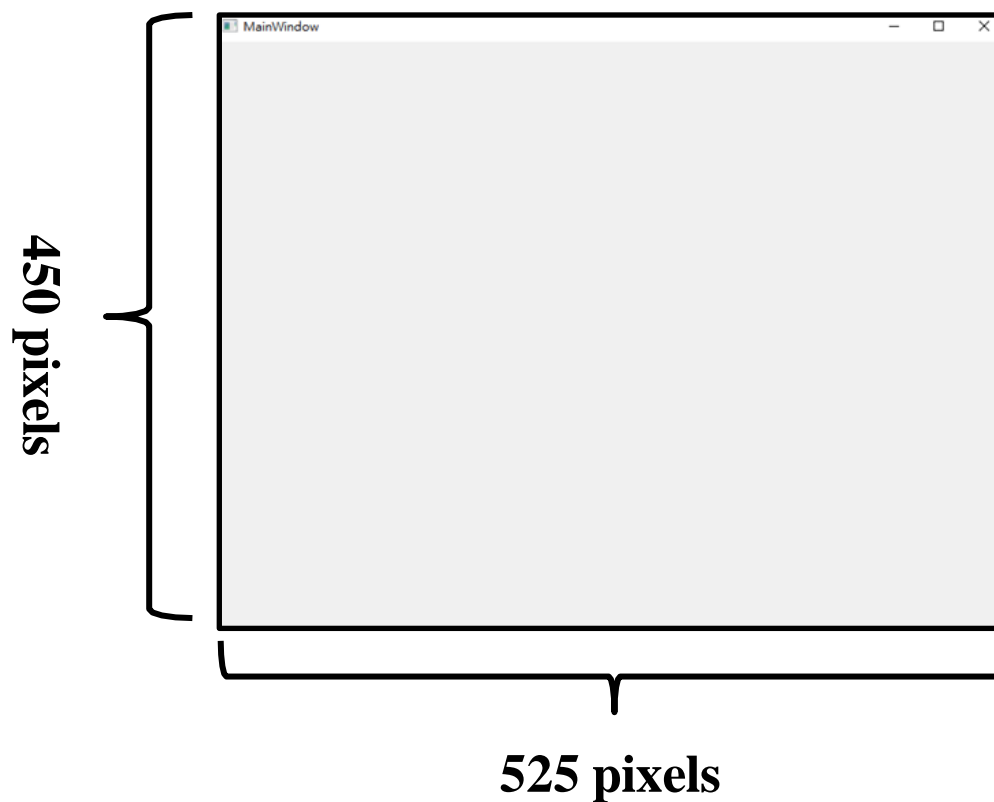


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Basic requirements

- Window size
 - Width : 525 pixels
 - Height : 450 pixels



Basic requirements

- Five scenes are required:

- Title Screen
- Battle Scene
- Exploration Mode
 - Laboratory
 - Town
 - Grassland



Title Screen



Battle Scene



Laboratory



Town



Grassland

Basic requirements

- the following elements must be included in the Exploration Mode:

- Player 

- Barrier (various types)

- NPC 

- Lab table 

- Bulletin Board 

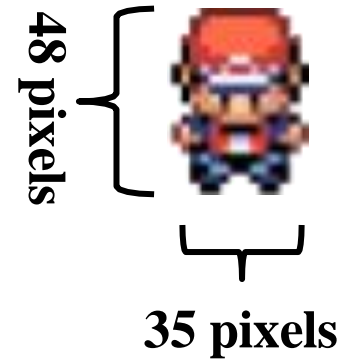
- Box 

- Tall Grass 


- Ledge 

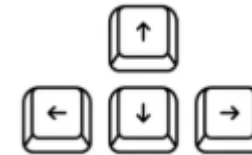
Basic requirements - Player

- Player Size (W: 35 pixels H : 48 pixels)




- Player Control

- You can control the Player using the keyboard **arrow keys**
- Press the **"A"** key to start or end an interaction, 



when encountering the following elements:

- NPC (Opens dialogue)
- Bulletin Board (View content)
- Box (Obtain items)
- Lab table (Obtain your first Pokémon, **ONLY ONCE**)
- Press the **"B"** key to open or close the **Bag Menu**. 
- When a dialogue box or the Bag Menu is open, the Player cannot move until it is closed

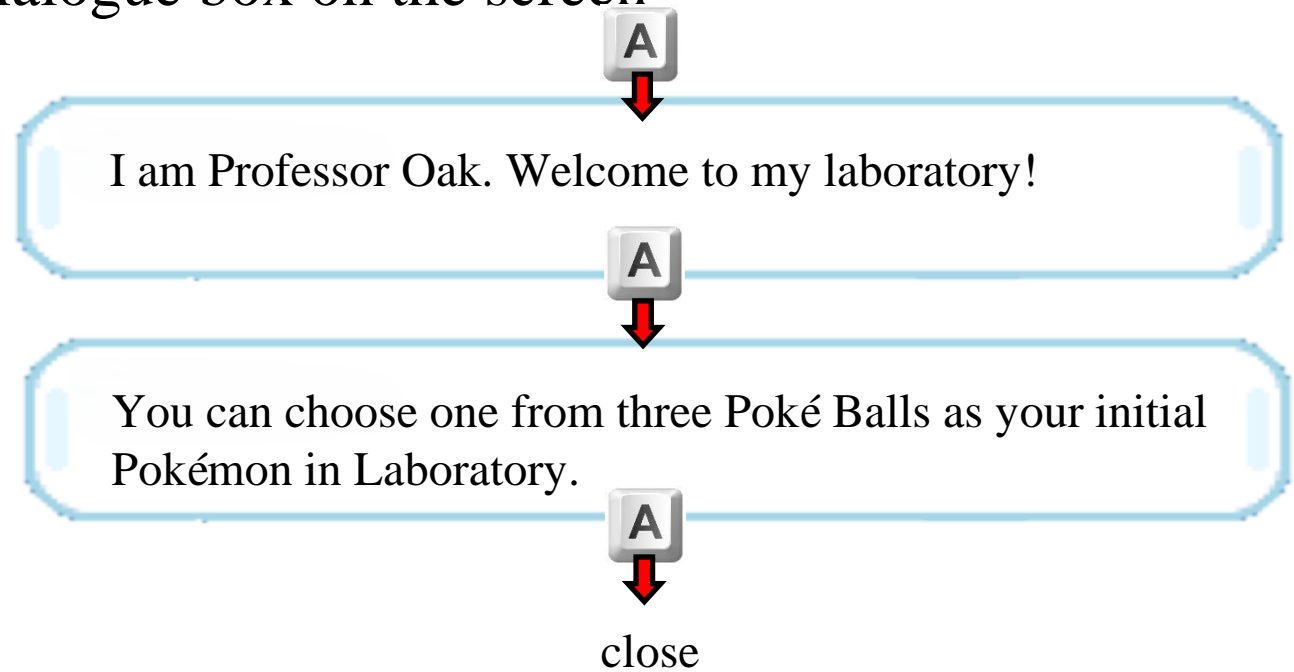
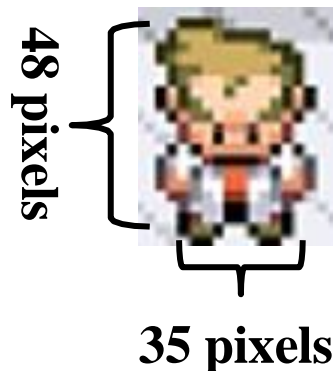
Basic requirements - Barrier

- The player **cannot cross** the barrier
- The player **cannot overlap** with the barrier
- The barrier blocks the player's movement in all directions
- Barriers may represent bookshelves, trees, fences, and so on in the game



Basic requirements - NPC

- Players cannot pass through NPCs, treating them as barriers
- Dialogues
 - When the player is near an NPC, You can press the "A" key to trigger dialogues
 - The conversation appears in a dialogue box on the screen



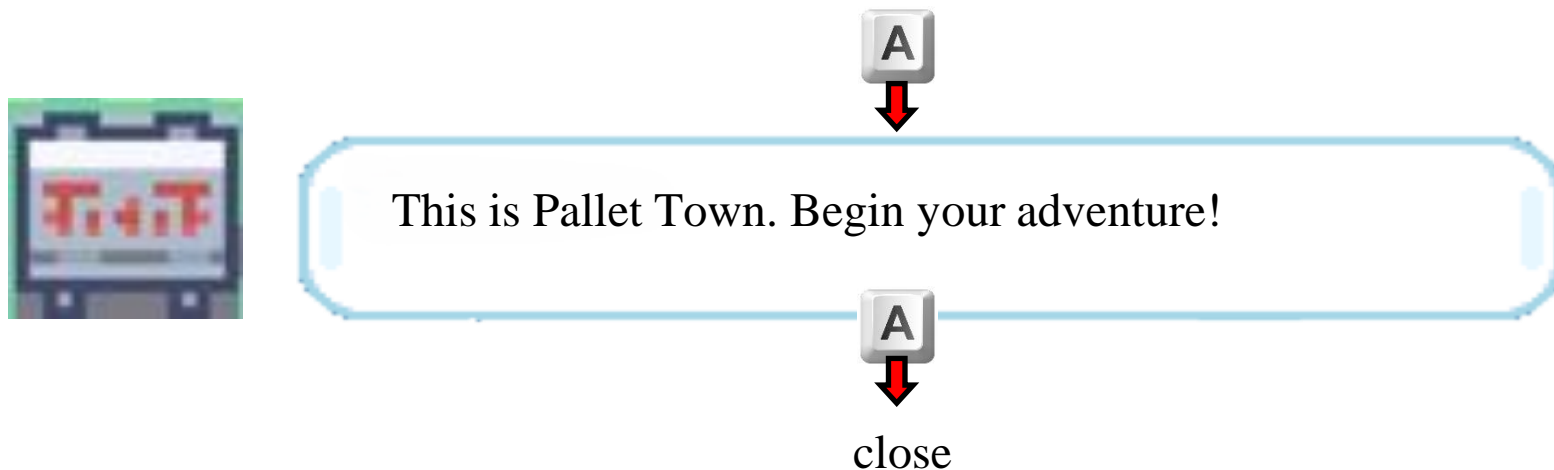
Basic requirements - Lab Table

- Players cannot pass through Lab Table, treating it as barriers
- Choosing your starter Pokémon
 - Press "**A**" key in front of a Poké Ball
 - Select one of **three** starter Pokémon as your partner
- The chosen Pokémon will fight for you in **battle scenes**
- The chosen Pokémon will be displayed in the **Bag Menu**

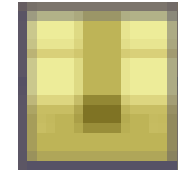





Basic requirements - Bulletin Board

- Players cannot pass through Bulletin Board, treating it as barriers
- Dialogues
 - When the player is near a Bulletin Board, press the "A" key to check the notice
 - The notice content will appear in a dialogue box on the screen



Basic requirements - Box



- 15 Boxes randomly appear in the Town
- Boxes cannot overlap with barriers
- The player can approach and press "A" to open a Box
- Upon opening, a dialogue box displays the obtained item
- Each Box gives one of three random items:
 - Poké Ball – Used to capture wild Pokémon.(up to three) 
 - Potion – Restores 10 HP. 
 - Ether – Fully restores PP. 
- The Bag Menu updates to show the current item count

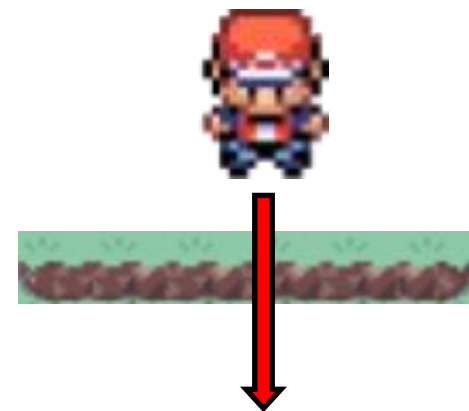
Basic requirements – Tall Grass

- The player **can walk through** Tall Grass freely
- Connected Tall Grass tiles are considered **one single area**
- While moving within a Tall Grass area, the player has a **random chance** to encounter a wild Pokémon and enter Battle Scene
- Each Tall Grass area will **trigger only one battle** before the player leaves and re-enters



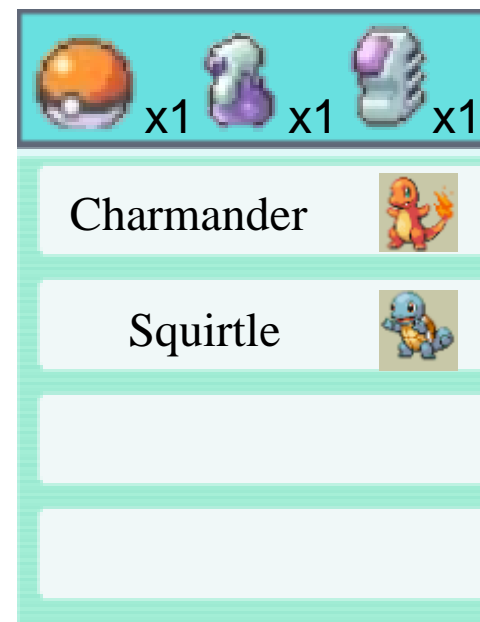
Basic requirements – Ledge

- The ledge acts as a **one-way barrier**, restricting movement from below
- The player **can only jump down** from the ledge (top to bottom)
- The player **cannot climb up** the ledge (bottom to top)



Basic requirements – Bag Menu

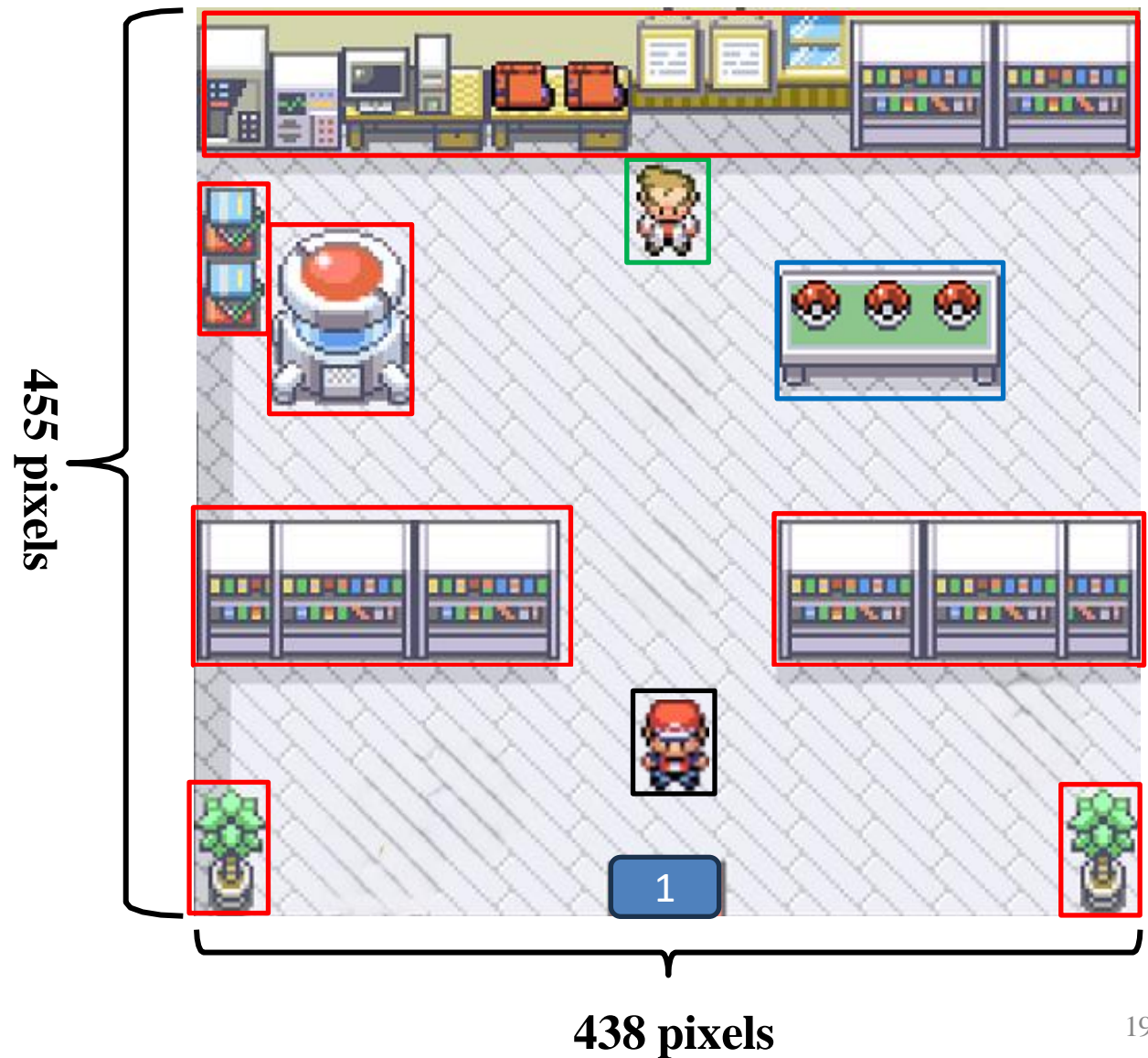
- Press the "B" key to open or close the Bag Menu
- When the Bag Menu is open, the Player cannot move
- The Bag Menu must display:
 - All owned items along with their quantities.
 - All owned Pokémon



Basic requirements - Laboratory

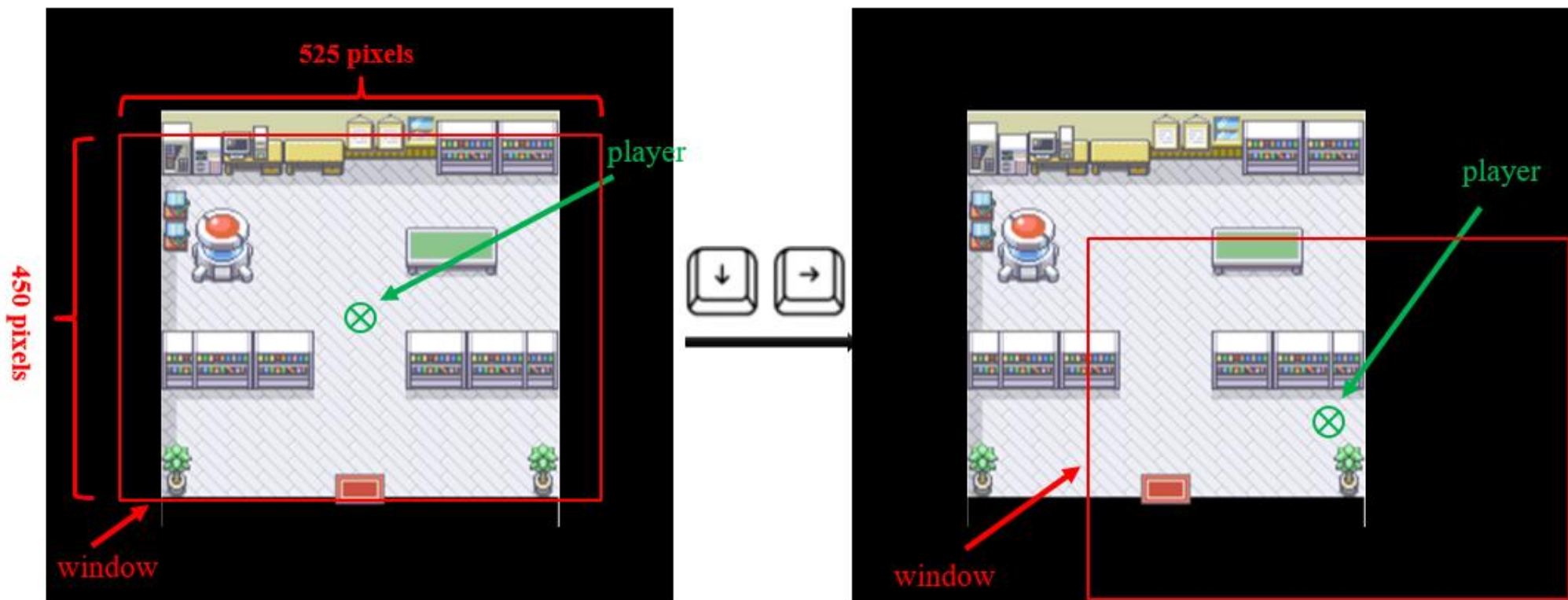
- You can choose one from three Poké Balls from **Lab table**
- There may be **barriers** blocking your way
- Interacting with **NPC** can trigger dialogues
- Elements
 - Player
 - **NPC**
 - **Lab Table**
 - **Barrier**
 - Scene Transition Point(To/From “Town”) **1**

When Player reaches the area, they will enter the **Town**



Basic requirements

- Player Movement in Laboratory
 - The background size is **smaller** than the window size
 - Areas **beyond the background** are displayed as **black**
 - The player always remains centered on the screen, even when moving to the corner. The window adjusts to **keep the player in the center**



Basic requirements - Town

- **Boxes** will randomly appear in Town
- Elements
 - Player
 - Bulletin Board
 - **Barrier**
 - **Box (Appears Randomly)**
 - Scene Transition Point
 - 1 To/From “Laboratory”
 - 2 To/From “Grassland”



Basic requirements - Grassland

1000 pixels

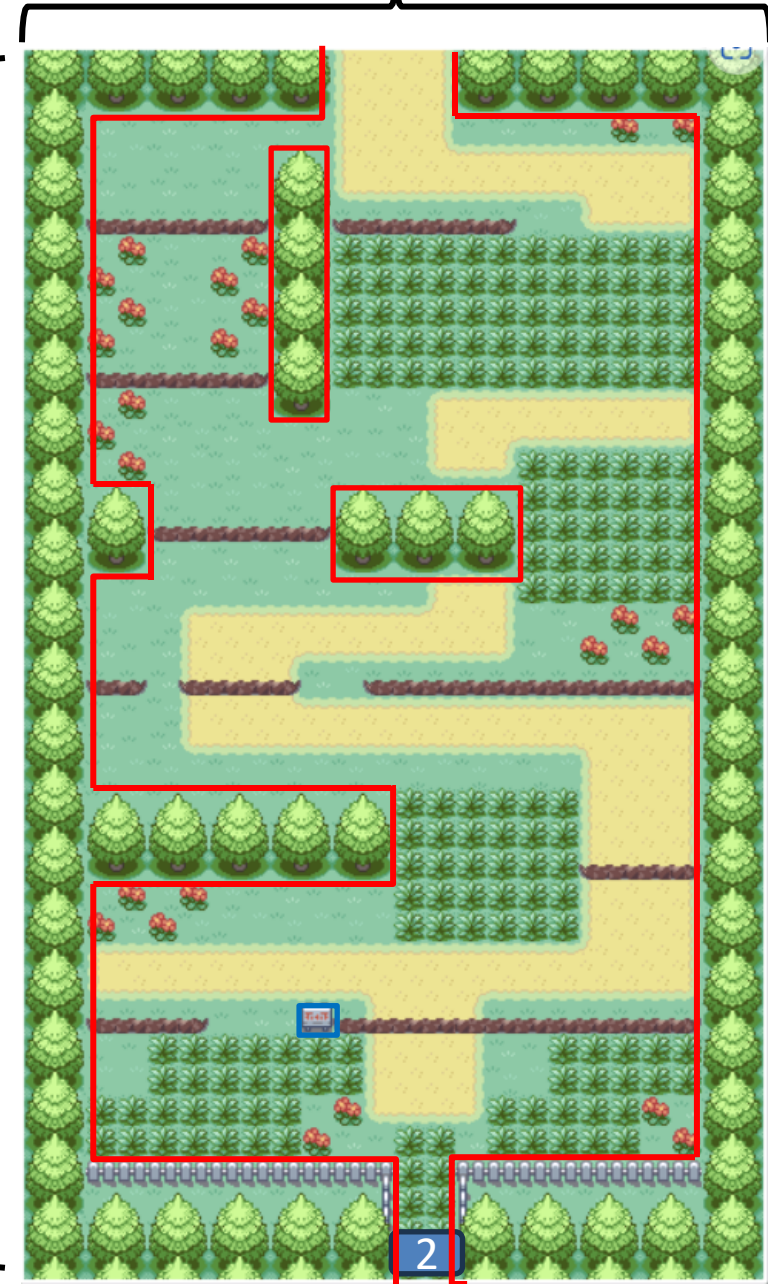


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- You may encounter wild Pokémon in **Tall Grass** and enter a battle scene
- Elements
 - Player
 - **Bulletin Board**
 - **Barrier**
 - **Ledge**
 - **Tall Grass**
 - Scene Transition Point
 - 2 To/From “Town”



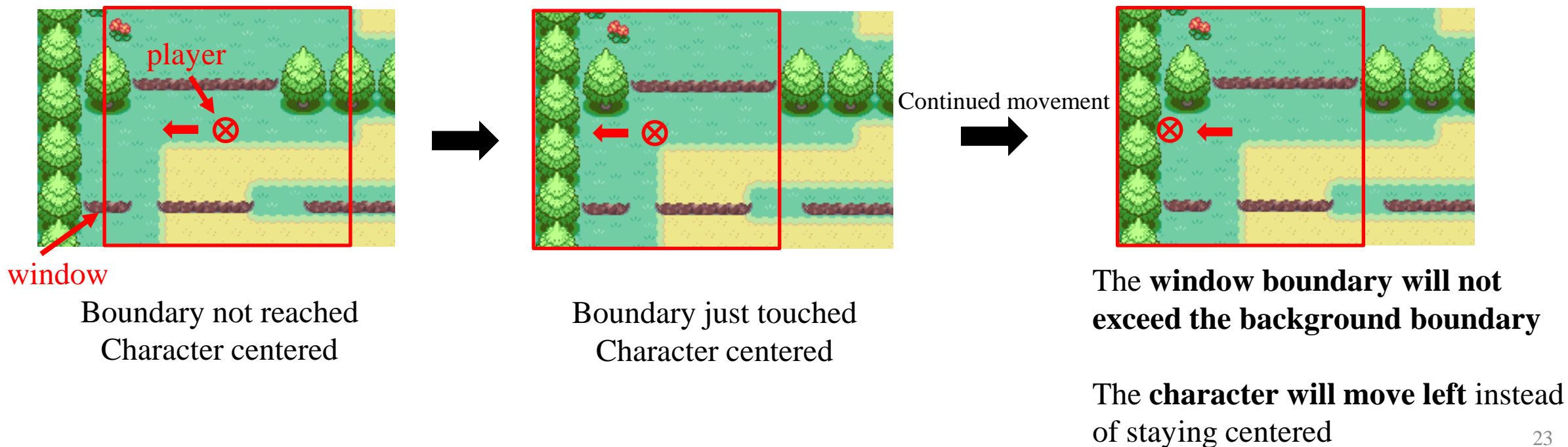
1667 pixels



Basic requirements

• Player Movement in Town & Grassland Background

- The background size is **larger** than the window size
- The window **cannot display areas beyond the background** (the window boundaries are limited to the background boundaries)
- The character stays centered on the screen, **except when reaching the background boundary**. In that case, the character will no longer be centered and will **appear closer to the boundary**



Basic requirements - Battle Scene

Enemy's
Battle Panel



Wild Pokémon

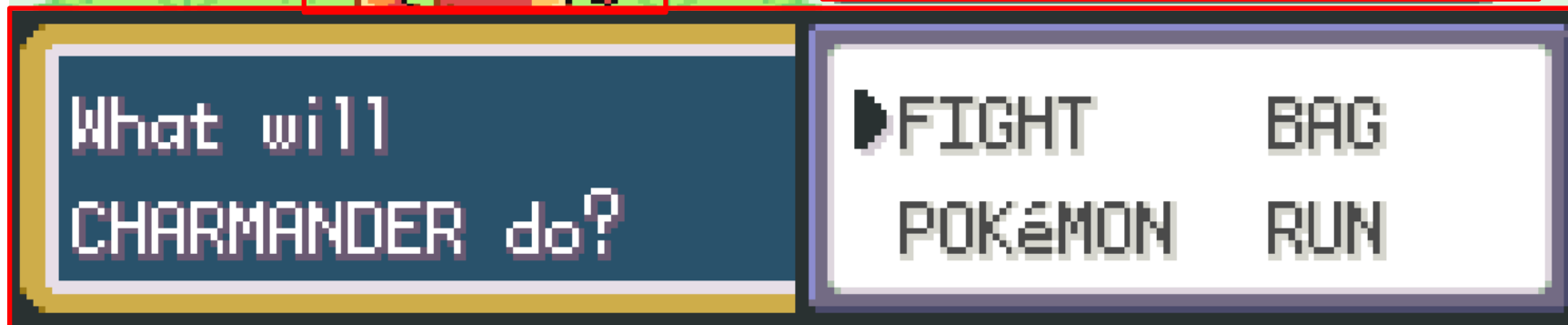


Player's
Pokémon



Player's
Battle Panel

Battle
Menu



Basic requirements

- Battle Scene

- In the battle scene, the following elements must be present:

- Wild Pokémon
 - Player's Pokémon
 - Battle Panels (including Pokémon name, level, and HP bar)

The **HP change value** must be displayed.

- Battle menu (Selecting certain options will open a sub-menu)

- Fight : Displays all available moves of the current Pokémon

Each move should display its **power** and its **remaining PP / max PP**.

- Bag : Displays all owned items (The remaining quantity should be displayed.)
 - Pokémon : Displays all owned Pokémon (**MAX : 4 Pokémon**)
 - Run : Escape from battle

Basic requirements

- Battle Rule
 - You can use your **mouse** to control your Pokémon and fight against enemies
 - This is a **turn-based game** where each turn consists of two phases: **your turn** and the **enemy's turn**
 - On **your turn**, you may perform only **one action**:
 - Selecting Fight allows you to use one of your active Pokémon's moves
 - Selecting Bag lets you use an item from your inventory
 - Selecting Pokémon allows you to switch to another Pokémon
 - Selecting Run lets you escape from battle
 - After you finish your action, it will be the enemy Pokémon's turn to attack
 - **All actions will be displayed in the Battle Menu.**(damage attack & received, items used)²⁶

Basic requirements

- Battle Rule

For example

one action

- Run
- Fight → Scratch (move)
- Bag → Potion (item)
- Pokémon → Squirtle (another Pokémon)

➔ **enemy Pokémon attack**

your turn

enemy's turn



Basic requirements

- Battle Rule
 - Each move has a PP (Power Points) count
 - Every time a move is used, its PP decreases by one
 - When PP reaches zero, the move can no longer be used (it can be restored using Ether)
 - When you win a battle, your Pokémon will level up
 - Your Pokémon's HP and PP in an encounter will be the same as they were at the end of the last battle
 - **If all your Pokémon's HP reach 0, the game is over**

Basic requirements




- Pokémon
 - Pokémon have base stats: Attack and Defense
 - All Pokémon start at level 1 (whether obtained in the lab or encountered in the wild)
 - Each level-up grants a new skill, with a **maximum of four skills**
 - Pokémon with evolution stages can evolve every two levels until they reach their final form
 - Pokémon Move
 - Moves have PP (the number of times a move can be used)
 - **Moves** deal direct damage based on Power
- Damage = (Power + User's Attack - Opponent's Defense) × Level**

Basic requirements

- Rules for catching Pokémon:
 - As long as there is a Poke Ball in your Bag, you can catch wild Pokémon.
 - The state of the captured Pokémon must be the same as the state it was captured at that time.
 - ex: If the wild Pokémon is captured when it has 5 hp left, then the captured Pokémon will only have 5 hp left.
 - The captured Pokémon must also appear in the Bag Menu.
 - During battle, you must be able to switch the captured Pokémon. All the rules for captured Pokémon are the same as the above-mentioned Battle Rules.
 - When you catch a Pokémon, a dialog box will pop up saying the name of the Pokémon you caught, then leave the battle scene.




Basic requirements

- Initial Pokémon - Squirtle

	Squirtle		Wartortle		Blastoise	
						
Level	1	2	3	4	5	6
Attack	5		10		15	
Defense	5		10		15	
MAX hp	30		80		100	
New Move	Tackle	Tail Whip	Protect	Wave Crash	-	-
power	10	15	20	25	-	-
pp	20	20	15	5	-	-




Basic requirements

- Initial Pokémon - Charmander

	Charmander		Charmeleon		Charizard	
						
Level	1	2	3	4	5	6
Attack	5		10		15	
Defense	5		10		15	
MAX hp	30		80		100	
New Move	Scratch	Growl	Scary Face	Flare Blitz	-	-
power	10	15	20	25	-	-
pp	20	20	15	5	-	-

Basic requirements

- Initial Pokémon - Bulbasaur

	Bulbasaur		Ivysaur		Venusaur	
						
Level	1	2	3	4	5	6
Attack	5		10		15	
Defense	5		10		15	
MAX hp	30		80		100	
New Move	Tackle	Growl	Growth	Razor Leaf	-	-
power	10	15	20	25	-	-
pp	20	20	15	5	-	-

Basic requirements(wild Pokémon)

- In the wild scene, you will randomly encounter these three Pokémon
- The skills and basic specifications of these three Pokémon are as shown in the table above
- All Pokémon encountered in the wild start at level 1



Basic requirements

- Example

$$(\text{Power} + \text{Charmander's Attack} - \text{Bulbasaur's Defense}) \times \text{Level}$$

$$(10 + 5 - 5) \times 1 = 10$$

	Lv 1 Charmander (our Pokémon)	Lv 1 Bulbasaur (wild Pokémon)
1. Player's Turn	Player's Turn - Charmander used Scratch! (PP:19/20)	Bulbasaur takes 10 damage! (HP: 20/30)
Enemy's Turn	Charmander takes 10 damage! (HP: 20/30)	Bulbasaur used Tackle! (PP:19/20)
2. Player's Turn	Used Potion! Charmander restores 10 HP! (HP: 30/30)	
Enemy's Turn	Charmander takes 10 damage! (HP: 20/30)	Bulbasaur used Tackle! (PP:18/20)
3. Player's Turn	Used Ether! Scratch PP fully restored! (PP: 20/20)	
Enemy's Turn	Charmander takes 10 damage! (HP: 10/30)	Bulbasaur used Tackle! (PP:17/20)
4. Player's Turn	Used Poké Ball!	Bulbasaur was caught!
End Battle		
Your Pokémon	Lv 1 Charmander (HP: 10/30)	Lv 1 Bulbasaur (HP: 20/30)
Pokémon move	Scratch (PP: 20/20)	Tackle (PP:17/20)

Bonus

- The total bonus range is 1 ~ 20 pts
- You can take inspiration from Nintendo's Pokémon to design the following bonus:
 - Moving NPC (3 pts)
 - Sound effect (battle & catch) (2 pts)
 - Add additional base stats (Special Attack, Special Defense, Speed) (5 pts)
 - Add three additional type effectiveness mechanics (5 pts)
- In addition to the above, if you want to do the additional bonus, please send email to discuss your spec with TAs

File hierarchy

- Project1_GroupXX.zip (replace XX by your group ID on moodle)
 - README
 - Project1_GroupXX.pdf (project report)
 - game (a folder put your source code here)
 - *.cpp
 - *.h
 - *.pro
 - *.qrc (Attach it only if you use Qt Creator to compile your code)
 - Makefile (Generate by qmake)
 - Dataset (You can use material provided by TAs)

README vs. Report

- README

- Introduce your project **briefly** (How to control , How to play & etc.)
- How to compile your code (e.g. g++, make)
- What optional command should be used when running your executable file (e.g. ./test123)
- List down what you had done in the project (i.e. basic requirements, bonus)

- Report

- Explain how you implement the specification **in detail** (no code!)
- Propose your framework
- What difficulties you have overcome
- Incomplete description and information will reduce your chances to get more credits

Grading Policy

Project Score = report + demo + code + **bonus**

- **Due on 5/7 13:00 (Wed.)**
- Basic Requirement
 - Report – 10pts
 - Demo – 15pts
 - Code – The upper limit of the score will be different depending on the number of people in the team
 - **85pts** for 1 person team
 - **75pts** for 2 or 3 people team
- Bonus score will be directly added to your project score (at most 20 pts)
- **If delay, $scores = original \times 0.9^{delay_days}$**
 - **Please write down the contribution ratio of your team. If the contribution ratio is not listed, it will be regarded as an equal share.**
 - **The grading will refer to contributions.**

Grading Policy- Demo & Code similarity checker

- During the **on-site demo**, each group need to **modify** a portion of your program's functionality according to our new requirements
- If you use the code generated by ChatGPT, but fail to provide correct answers for your code, or modify the code correctly during the demo, it would be considered plagiarism
- If the code similarity checker shows that your code is very similar to another student, **both of you need to demo and modify your program according to our new requirements on site**
- If you cannot complete our request, we will adjust total project score

Reference

- Pokémon FireRed – Story and Game Information:

https://pokemon.fandom.com/wiki/Pok%C3%A9mon_FireRed_Version_and_Pok%C3%A9mon_LeafGreen_Version

- Game video link:

<https://youtu.be/1MOjNA7I98g?si=vaSLooHHAoPYnFIIm>

- Community-driven encyclopedia:

https://bulbapedia.bulbagarden.net/wiki/Main_Page