Project Documentation
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Project Title: RPG Game
Project Description: creating a simple role playing game in C#. The game involves two types of characters, warrior and mage. Each character has a name, health point (HP), and an attack method. The warrior has a special ability called slash, and the mage has a special ability called fireball**.**

Project Structure:

- Character.cs: Abstract base class for characters
- 'Warrior.cs': Concrete class for warrior characters
- 'Mage.cs': Concrete class for mage characters
- 'Program.cs': Main program file for the RPG game

Sprint Plan:

Sprint 1:

- Task 1.1: Create the Character abstract base class (1 hour)
- Task 1.2: Implement the Warrior and Mage concrete classes (2 hours)
- Task 1.3: Develop the main program for the RPG game (3 hours)

Sprint 2:

- Task 2.1: Implement the Longest Substring Without Repeating Characters algorithm (2 hours)
- Task 2.2: Implement the Word Ladder algorithm (2 hours)
- Task 2.3: Develop the main program for the algorithmic challenges (1 hour)

Sprint 3:

- Task 3.1: Test and debug the RPG game (2 hours)
- Task 3.2: Test and debug the algorithmic challenges (2 hours)
- Task 3.3: Refactor and optimize the code (1 hour)

Sprint 4:

- Task 4.1: Add additional features to the RPG game (e.g., character leveling, item system) (3 hours)
- Task 4.2: Add additional algorithmic challenges (e.g., Fibonacci sequence, binary search) (2 hours)
- Task 4.3: Finalize the project documentation   (1 hour)

Project Timeline:

- Sprint 1: 6 hours
- Sprint 2: 5 hours
- Sprint 3: 5 hours
- Sprint 4: 6 hours
- Total project time: 22 hours

Project Deliverables:

- A comprehensive RPG game project documentation, including code comments and a sprint plan
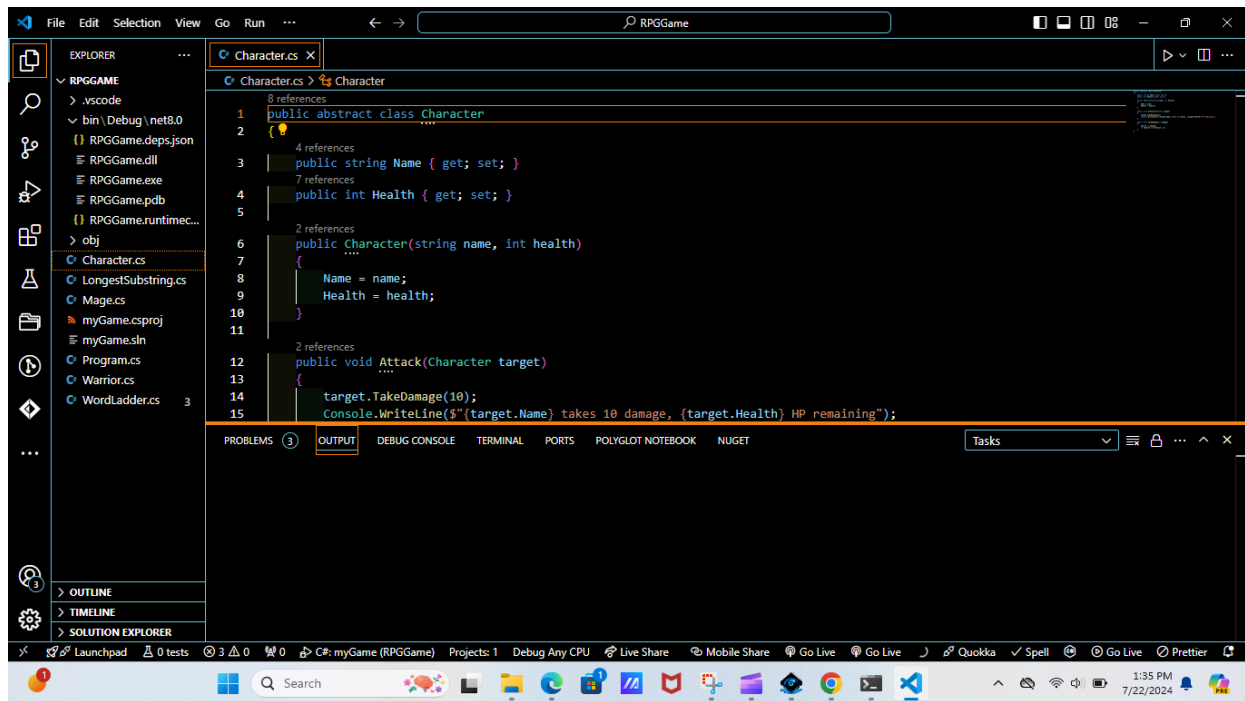- A presentation summarizing the project's features and challenges

Project Risks:

- Insufficient time for testing and debugging
- Difficulty in implementing the challenges
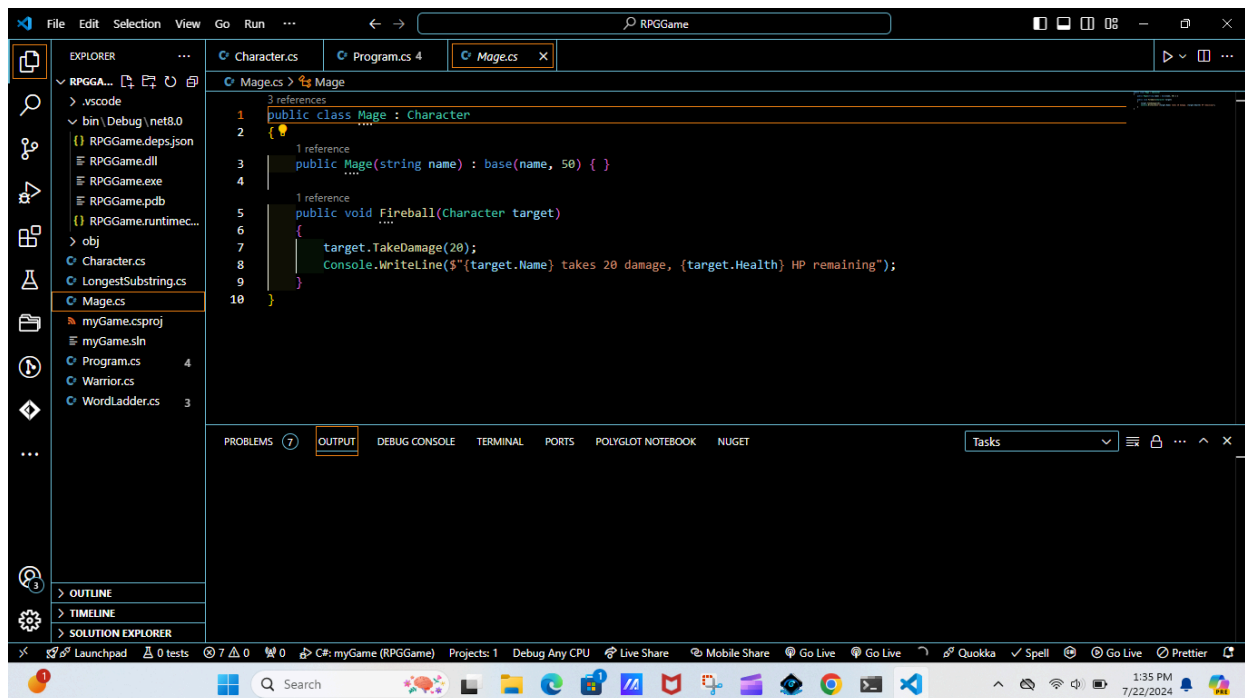- Inadequate documentation and commenting of the code

Project Assumptions:

- The project will be developed using C# and Visual Studio
- The RPG game will be console-based
- The algorithmic challenges will be implemented using standard C# libraries and data structures
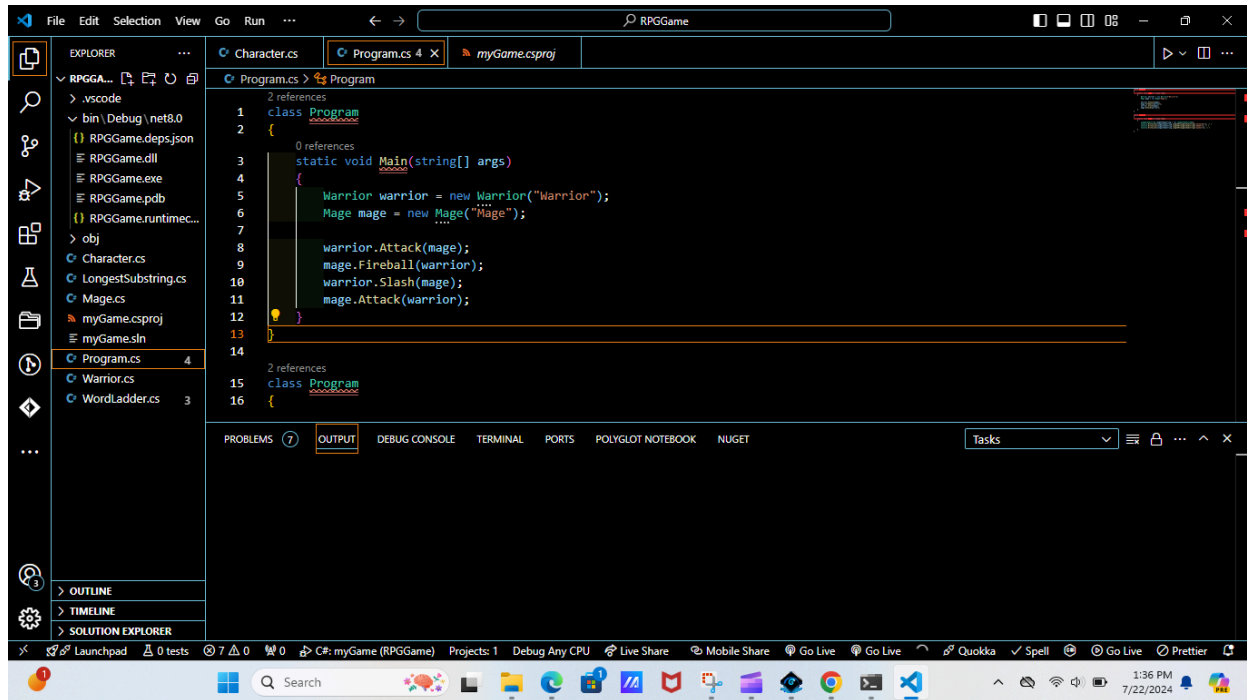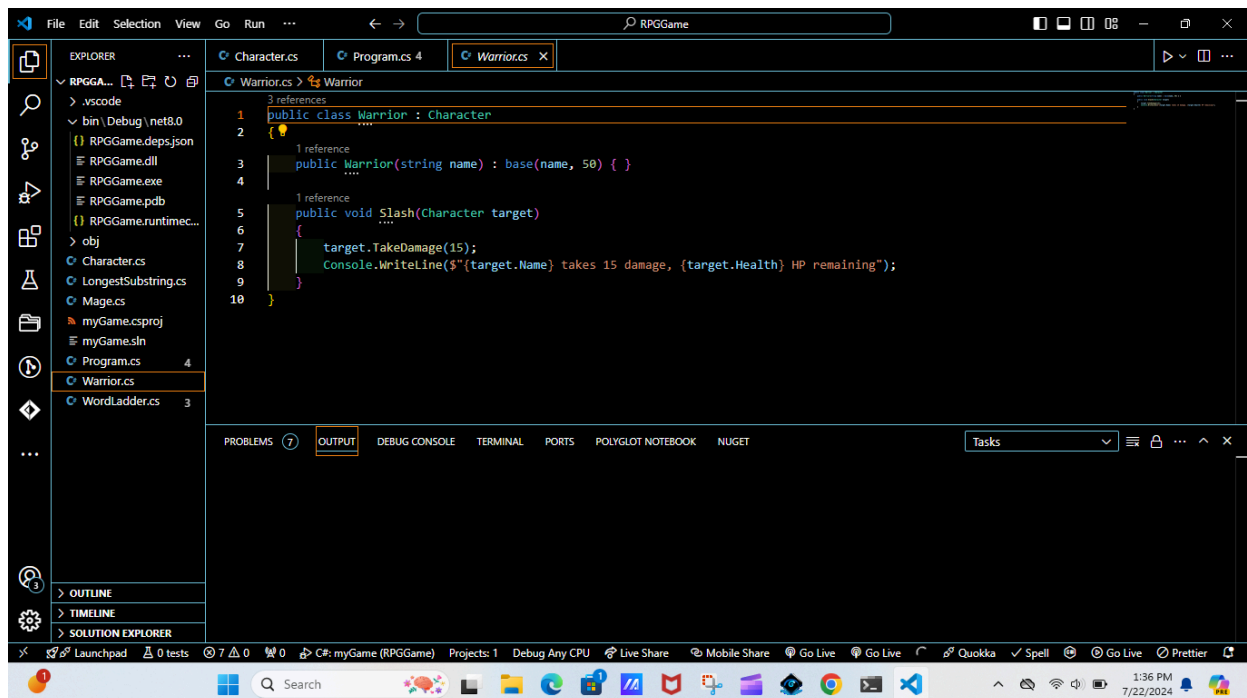
Character.cs


```csharp
public abstract class Character
{
    public string Name { get; set; }

    public int Health { get; set; }

    public Character(string name, int health)
    {
        Name = name;
        Health = health;
    }

    public void Attack(Character target)
    {
        target.TakeDamage(10);
        Console.WriteLine($"{target.Name} takes 10 damage, {target.Health} HP remaining");
```

Mage.cs


```csharp
public class Mage : Character
{
    public Mage(string name) : base(name, 50) { }

    public void Fireball(Character target)
    {
        target.TakeDamage(20);
        Console.WriteLine($"{target.Name} takes 20 damage, {target.Health} HP remaining");
    }
}
```
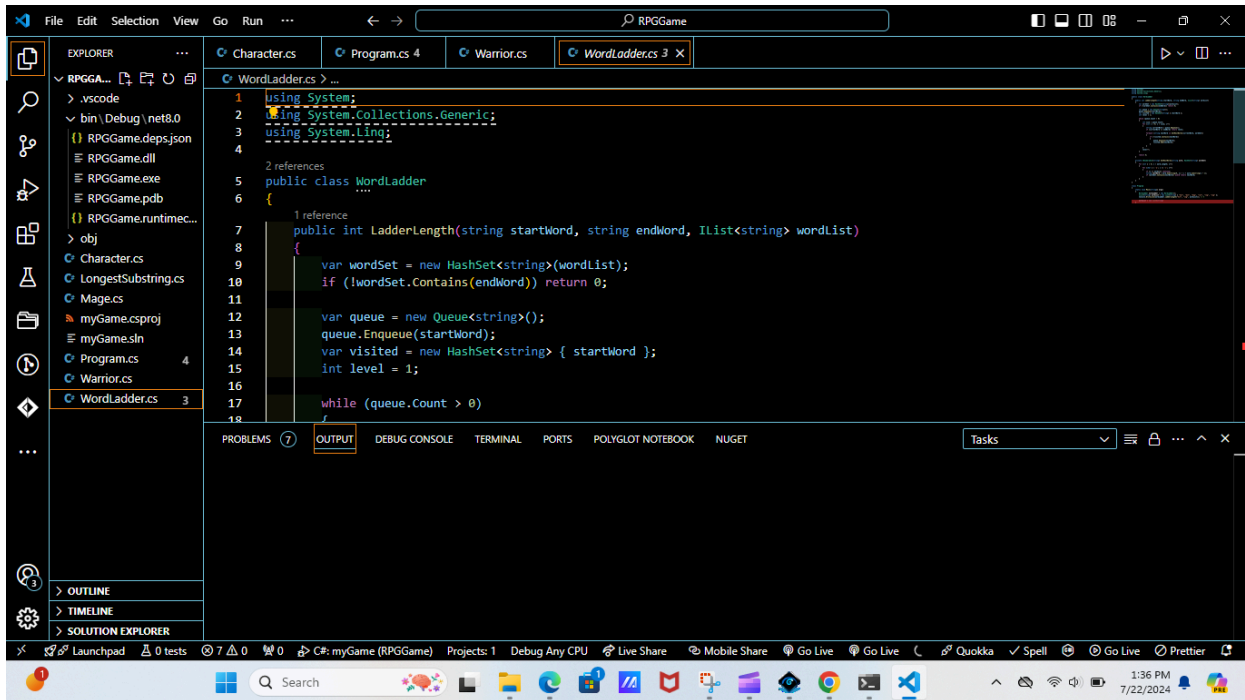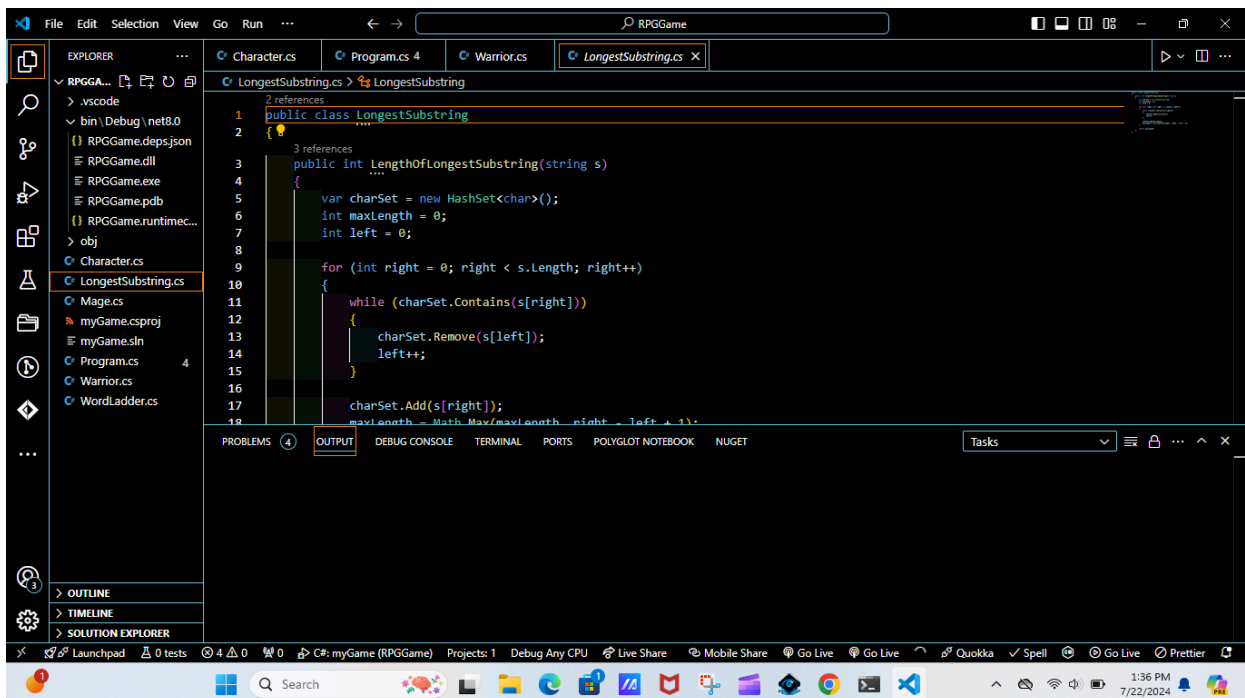
Program.cs

Warrior.cs

WordLadder.cs

LongsetSubstring.cs

deps.json

```json
{
    "runtimeTarget": {
        "name": ".NETCoreApp,Version=v8.0",
        "signature": ""
    },
    "compilationOptions": {},
    "targets": {
        ".NETCoreApp,Version=v8.0": {
            "RPGGame/1.0.0": {
                "runtime": {
                    "RPGGame.dll": {}
                }
            }
        }
    },
    "libraries": {
        "RPGGame/1.0.0": {
            "type": "project",
            "serviceable": false,
```