Практична 4.

Завдання 1 (тут лише одне, тому не знаю для чого я це написав).

```
using System;
using System.Collections.Generic;

// Interface for Spells
interface ISpell
{
    void Cast(Mage caster, Mage target);
}

// Delegate for mage attack and defense events
delegate void MageEventHandler(string message);

// Abstract class Mage
abstract class Mage
{
    public string Name { get; private set; }
    public int Level { get; private set; }
    public int Health { get; private set; }
    public List<ISpell> Spells { get; private set; }
```

```
public event MageEventHandler OnAttack;
public event MageEventHandler OnDefend;

protected Mage(string name, int level)
{
   Name = name;
   Level = level;
   Health = 100;
   Spells = new List<ISpell>();
}

public abstract void Attack(Mage target);
public abstract void Defend(int damage);

public void AdjustHealth(int amount)
{
   Health += amount;
   if (Health < 0)
      Health = 0;
}
```

```
    protected virtual void RaiseAttackEvent(string message)
    {
        OnAttack?.Invoke(message);
    }

    protected virtual void RaiseDefendEvent(string message)
    {
        OnDefend?.Invoke(message);
    }

    public bool IsAlive()
    {
        return Health > 0;
    }
}

// Fire Mage class
class FireMage : Mage
{
    public FireMage(string name, int level) : base(name, level)
    {
        Spells.Add(new Fireball());
```

```
        Spells.Add(new FlameShield());
    }

    public override void Attack(Mage target)
    {
        RaiseAttackEvent($"{Name} attacks {target.Name} with a fire spell!");
        Spells[0].Cast(this, target); // Using Fireball as attack
    }

    public override void Defend(int damage)
    {
        RaiseDefendEvent($"{Name} defends with a flame shield!");
        Spells[1].Cast(this, this); // Using FlameShield as defense
        AdjustHealth(-damage);
        Console.WriteLine($"{Name} has {Health} health left.");
    }
}

// Water Mage class
class WaterMage : Mage
{
    public WaterMage(string name, int level) : base(name, level)
```

```
    {
        Spells.Add(new WaterBlast());
        Spells.Add(new WaterShield());
    }

    public override void Attack(Mage target)
    {
        RaiseAttackEvent($"{Name} attacks {target.Name} with a water spell!");
        Spells[0].Cast(this, target); // Using WaterBlast as attack
    }

    public override void Defend(int damage)
    {
        RaiseDefendEvent($"{Name} defends with a water shield!");
        Spells[1].Cast(this, this); // Using WaterShield as defense
        AdjustHealth(-damage);
        Console.WriteLine($"{Name} has {Health} health left.");
    }
}

// Spells
class Fireball : ISpell
```

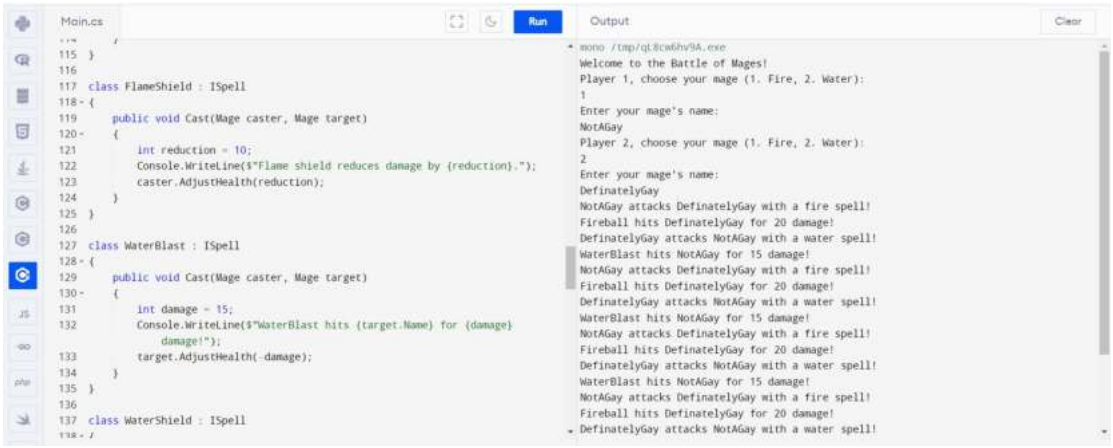
```
{
    public void Cast(Mage caster, Mage target)
    {
        int damage = 20;
        Console.WriteLine($"Fireball hits {target.Name} for {damage} damage!");
        target.AdjustHealth(-damage);
    }
}

class FlameShield : ISpell
{
    public void Cast(Mage caster, Mage target)
    {
        int reduction = 10;
        Console.WriteLine($"Flame shield reduces damage by {reduction}.");
        caster.AdjustHealth(reduction);
    }
}

class WaterBlast : ISpell
{
    public void Cast(Mage caster, Mage target)
```

```
    {
        int damage = 15;
        Console.WriteLine($"WaterBlast hits {target.Name} for {damage} damage!");
        target.AdjustHealth(-damage);
    }
}

class WaterShield : ISpell
{
    public void Cast(Mage caster, Mage target)
    {
        int reduction = 15;
        Console.WriteLine($"Water shield reduces damage by {reduction}.");
        caster.AdjustHealth(reduction);
    }
}

// Main game class
class Game
{
    public void Start()
    {
```

```
    Console.WriteLine("Welcome to the Battle of Mages!");

    Mage mage1 = ChooseMage("Player 1");
    Mage mage2 = ChooseMage("Player 2");

    mage1.OnAttack += DisplayEvent;
    mage1.OnDefend += DisplayEvent;
    mage2.OnAttack += DisplayEvent;
    mage2.OnDefend += DisplayEvent;

    Battle(mage1, mage2);
}

private Mage ChooseMage(string player)
{
    Console.WriteLine($"{player}, choose your mage (1. Fire, 2. Water): ");
    int choice = int.Parse(Console.ReadLine());

    Console.WriteLine("Enter your mage's name: ");
    string name = Console.ReadLine();

    return choice switch
```

```
    {
        1 => new FireMage(name, 1),
        2 => new WaterMage(name, 1),
        _ => throw new InvalidOperationException("Invalid choice")
    };
}

private void Battle(Mage mage1, Mage mage2)
{
    while (mage1.IsAlive() && mage2.IsAlive())
    {
        mage1.Attack(mage2);
        if (mage2.IsAlive())
        {
            mage2.Attack(mage1);
        }
    }

    if (mage1.IsAlive())
    {
        Console.WriteLine($"{mage1.Name} wins!");
    }
```

```
        else
        {
            Console.WriteLine($"{mage2.Name} wins!");
        }
    }

    private void DisplayEvent(string message)
    {
        Console.WriteLine(message);
    }
}

// Main Program
class Program
{
    static void Main()
    {
        Game game = new Game();
        game.Start();
    }
}
```


Main.cs
Run
Output
Clear
}
class FlameShield : ISpell
{
public void Cast(Mage caster, Mage target)
{
int reduction = 10;
Console.WriteLine($"Flame shield reduces damage by {reduction}.");
caster.AdjustHealth(reduction);
}
}
class WaterBlast : ISpell
{
public void Cast(Mage caster, Mage target)
{
int damage = 15;
Console.WriteLine($"WaterBlast hits {target.Name} for {damage}
damage!");
target.AdjustHealth(-damage);
}
}
class WaterShield : ISpell
mono /tmp/qL8cw6hv9A.exe
Welcome to the Battle of Mages!
Player 1, choose your mage (1. Fire, 2. Water):
1
Enter your mage's name:
NotAGay
Player 2, choose your mage (1. Fire, 2. Water):
2
Enter your mage's name:
DefinatelyGay
NotAGay attacks DefinatelyGay with a fire spell!
Fireball hits DefinatelyGay for 20 damage!
DefinatelyGay attacks NotAGay with a water spell!
WaterBlast hits NotAGay for 15 damage!
NotAGay attacks DefinatelyGay with a fire spell!
Fireball hits DefinatelyGay for 20 damage!
DefinatelyGay attacks NotAGay with a water spell!
WaterBlast hits NotAGay for 15 damage!
NotAGay attacks DefinatelyGay with a fire spell!
Fireball hits DefinatelyGay for 20 damage!
DefinatelyGay attacks NotAGay with a water spell!
WaterBlast hits NotAGay for 15 damage!
NotAGay attacks DefinatelyGay with a fire spell!
Fireball hits DefinatelyGay for 20 damage!
DefinatelyGay attacks NotAGay with a water spell!