Lab Sheet 9

Question 01

Container class

```
package com.mycompany.cylindermain;
abstract class Container
{
   double height;
   double radius;

   public Container(double height, double radius)
   {
      this.height = height;
      this.radius = radius;
   }

   public abstract double getVolume();
}
```

CylindricalContainer class

```
package com.mycompany.cylindermain;
class CylindricalContainer extends Container
{
   public CylindricalContainer(double height, double radius)
   {
      super(height, radius);
   }

   @Override
   public double getVolume()
```

```
    {
        double pi = 3.14159;
        return pi * getRadius() * getRadius() * getHeight();
    }

    public double getHeight()
    {
        return super.height;
    }

    public double getRadius()
    {
        return super.radius;
    }
}
```

CylinderMain

```
package com.mycompany.cylindermain;
public class CylinderMain
{
    public static void main(String[] args)
    {
        double height = 10.0; // Set the height of the cylindrical container
        double radius = 5.0; // Set the radius of the cylindrical container
        CylindricalContainer container = new CylindricalContainer(height, radius);
        double volume = container.getVolume();
        System.out.println("Volume of the cylindrical container: " + volume);
    }
}
```

```
Volume of the cylindrical container: 785.3975
```

Question 2

PlayerController Class

```
package com.mycompany.lifegame;
abstract class PlayerController
{
    public abstract void moveUp();
    public abstract void moveDown();
    public abstract void moveLeft();
    public abstract void moveRight();
}
```

TextPlayerController Class

```
package com.mycompany.lifegame;
class TextPlayerController extends PlayerController
{
    @Override
    public void moveUp()
    {
        System.out.println("Moving UP");
    }

    @Override
    public void moveDown()
    {
        System.out.println("Moving DOWN");
    }
```

```
    @Override
    public void moveLeft()
    {
        System.out.println("Moving LEFT");
    }

    @Override
    public void moveRight()
    {
        System.out.println("Moving RIGHT");
    }
}
```

LifeGame Main

```
package com.mycompany.lifegame;
public class LifeGame
{
    public static void main(String[] args)
    {
        // Create a TextPlayerController object
        PlayerController playerController = new TextPlayerController();
        // Simulate player movement using key presses
        playerController.moveUp();
        playerController.moveRight();
        playerController.moveDown();
        playerController.moveLeft();
    }
}
```