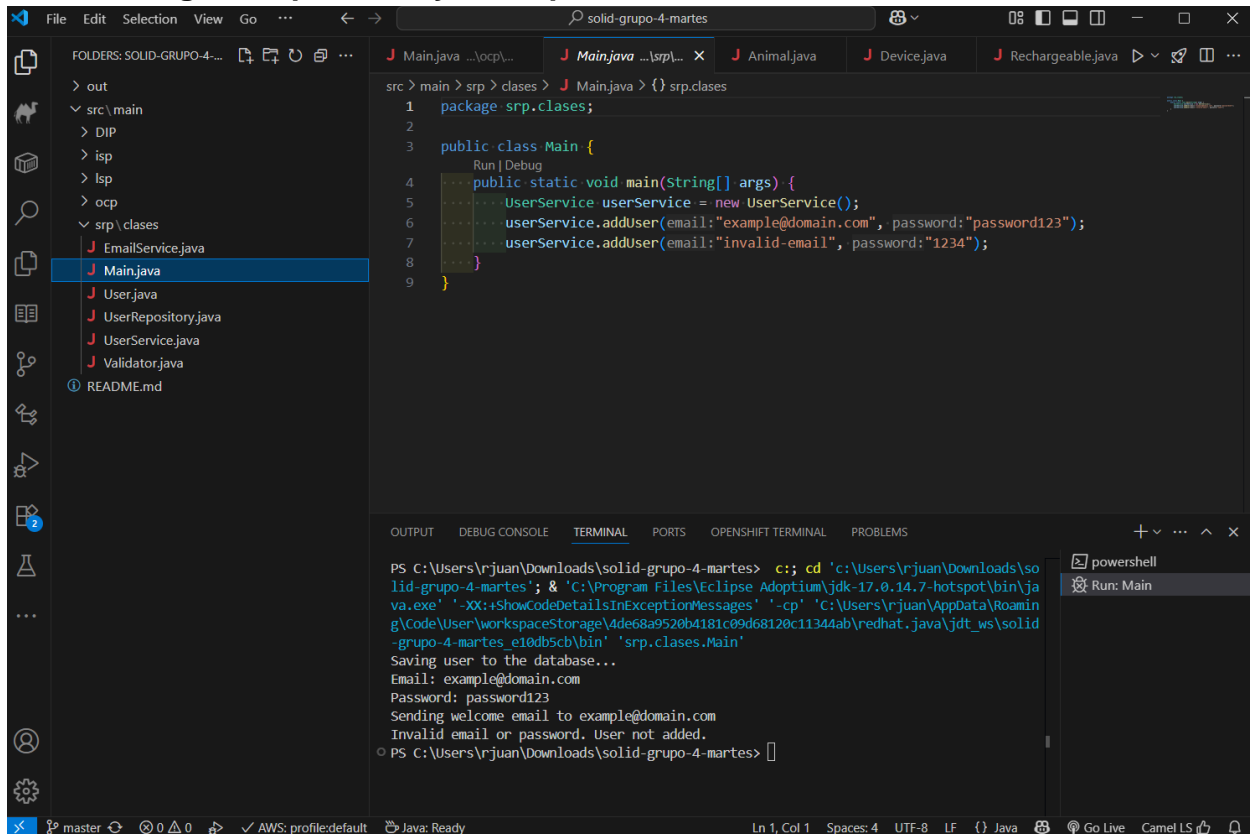


Universidad de Las Américas
Facultad de Ingenierías y Ciencias Aplicadas
Ingeniería de Software
Pruebas por cada principio Solid

SRP - Single Responsibility Principle

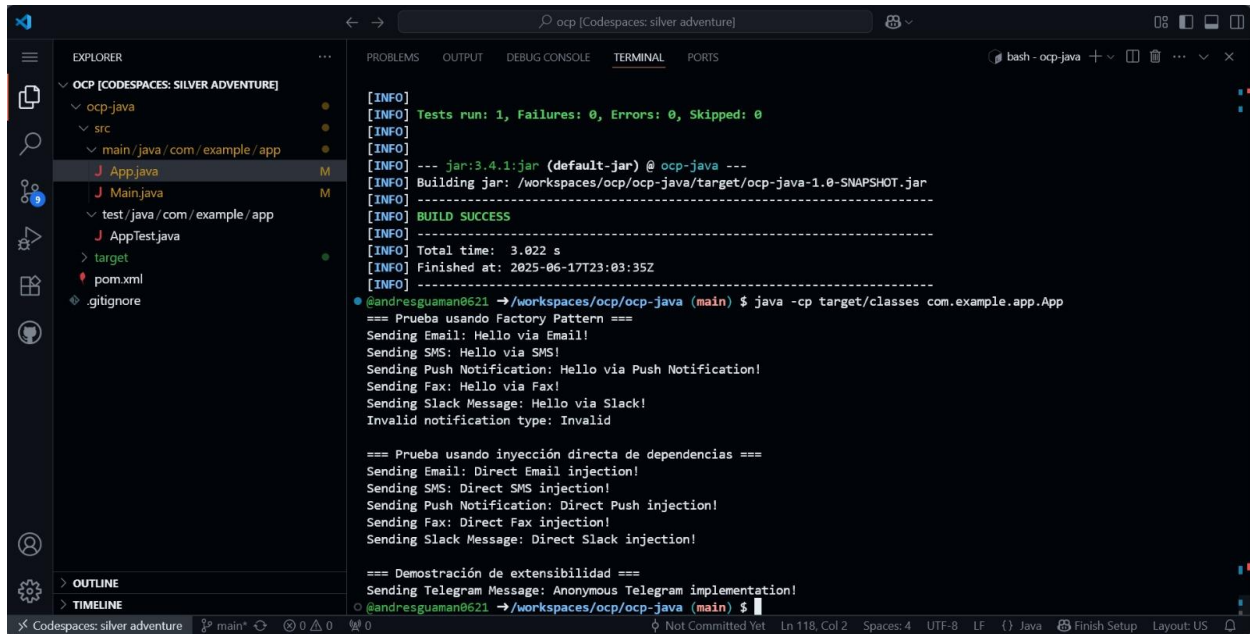


```
src > main > srp > clases > Main.java > {} srp.clases
1 package srp.clases;
2
3 public class Main {
4     Run | Debug
5     public static void main(String[] args) {
6         UserService userService = new UserService();
7         userService.addUser(email:"example@domain.com", password:"password123");
8         userService.addUser(email:"invalid-email", password:"1234");
9     }
}
```

```
PS C:\Users\rjuan\Downloads\solid-grupo-4-martes> c;; cd 'c:\Users\rjuan\Downloads\solid-grupo-4-martes'; & 'C:\Program Files\Eclipse Adoptium\jdk-17.0.14-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\rjuan\AppData\Roaming\Code\User\workspaceStorage\4de68a9520b4181c09d68120c11344ab\redhat.java\jdt_ws\solid-grupo-4-martes_e10db5cb\bin' 'srp.clases.Main'
Saving user to the database...
Email: example@domain.com
Password: password123
Sending welcome email to example@domain.com
Invalid email or password. User not added.
PS C:\Users\rjuan\Downloads\solid-grupo-4-martes>
```

Ejecución principio **SRP**

OCP - Open/Closed Principle



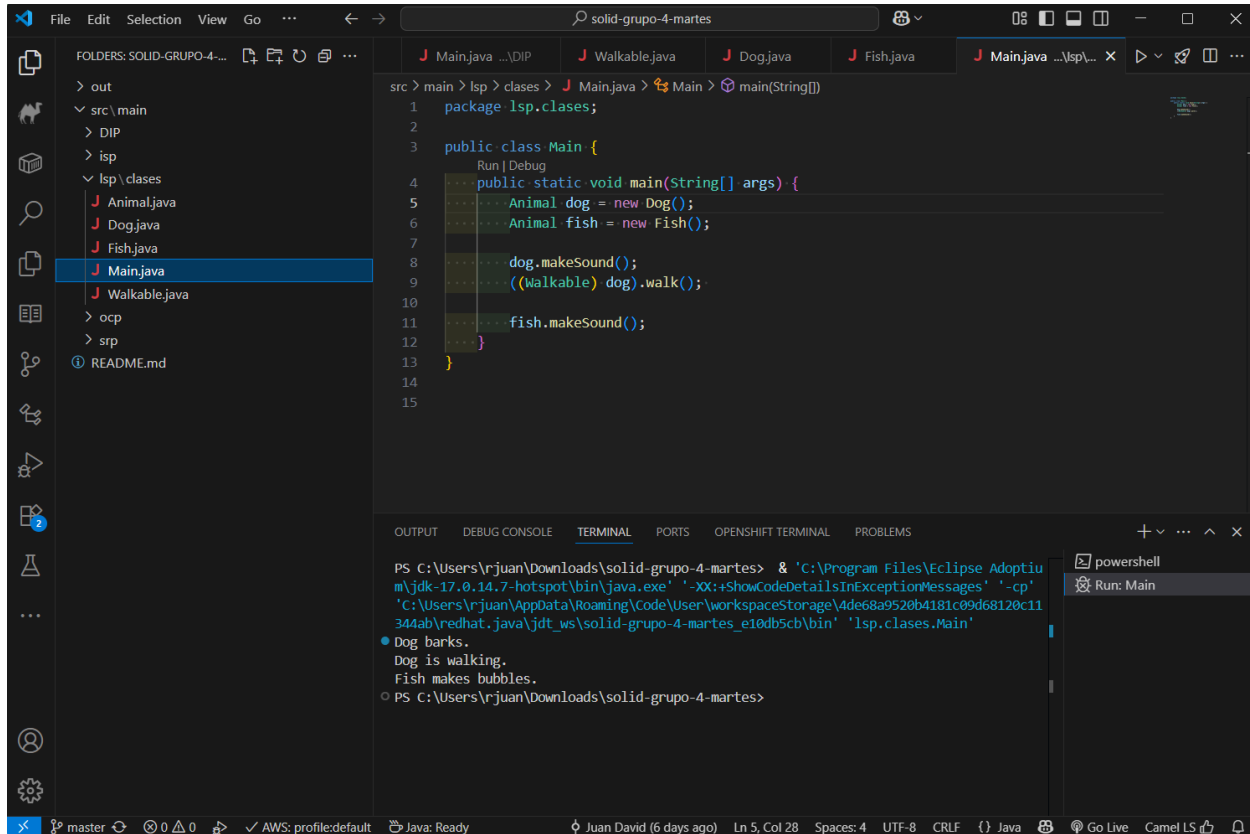
```
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] --- jar:3.4.1:jar (default-jar) @ ocp-java ---
[INFO] Building jar: /workspaces/ocp/ocp-java/target/ocp-java-1.0-SNAPSHOT.jar
[INFO] BUILD SUCCESS
[INFO] Total time: 3.022 s
[INFO] Finished at: 2025-06-17T23:03:35Z
[INFO]
@andresguaman0621 →/workspaces/ocp/ocp-java (main) $ java -cp target/classes com.example.app.App
=== Prueba usando Factory Pattern ===
Sending Email: Hello via Email!
Sending SMS: Hello via SMS!
Sending Push Notification: Hello via Push Notification!
Sending Fax: Hello via Fax!
Sending Slack Message: Hello via Slack!
Invalid notification type: Invalid

=== Prueba usando inyección directa de dependencias ===
Sending Email: Direct Email injection!
Sending SMS: Direct SMS injection!
Sending Push Notification: Direct Push injection!
Sending Fax: Direct Fax injection!
Sending Slack Message: Direct Slack injection!

=== Demostración de extensibilidad ===
Sending Telegram Message: Anonymous Telegram implementation!
@andresguaman0621 →/workspaces/ocp/ocp-java (main) $
```

Ejecución principio OCP

LSP - Liskov Substitution Principle



```
src > main > lsp > clases > J Main.java > Main > main(String[])
1 package lsp.clases;
2
3 public class Main {
4     Run | Debug
5     ... public static void main(String[] args) {
6         ... Animal dog = new Dog();
7         ... Animal fish = new Fish();
8
9         ... dog.makeSound();
10        ... ((Walkable) dog).walk();
11
12        ... fish.makeSound();
13    }
14
15 }
```

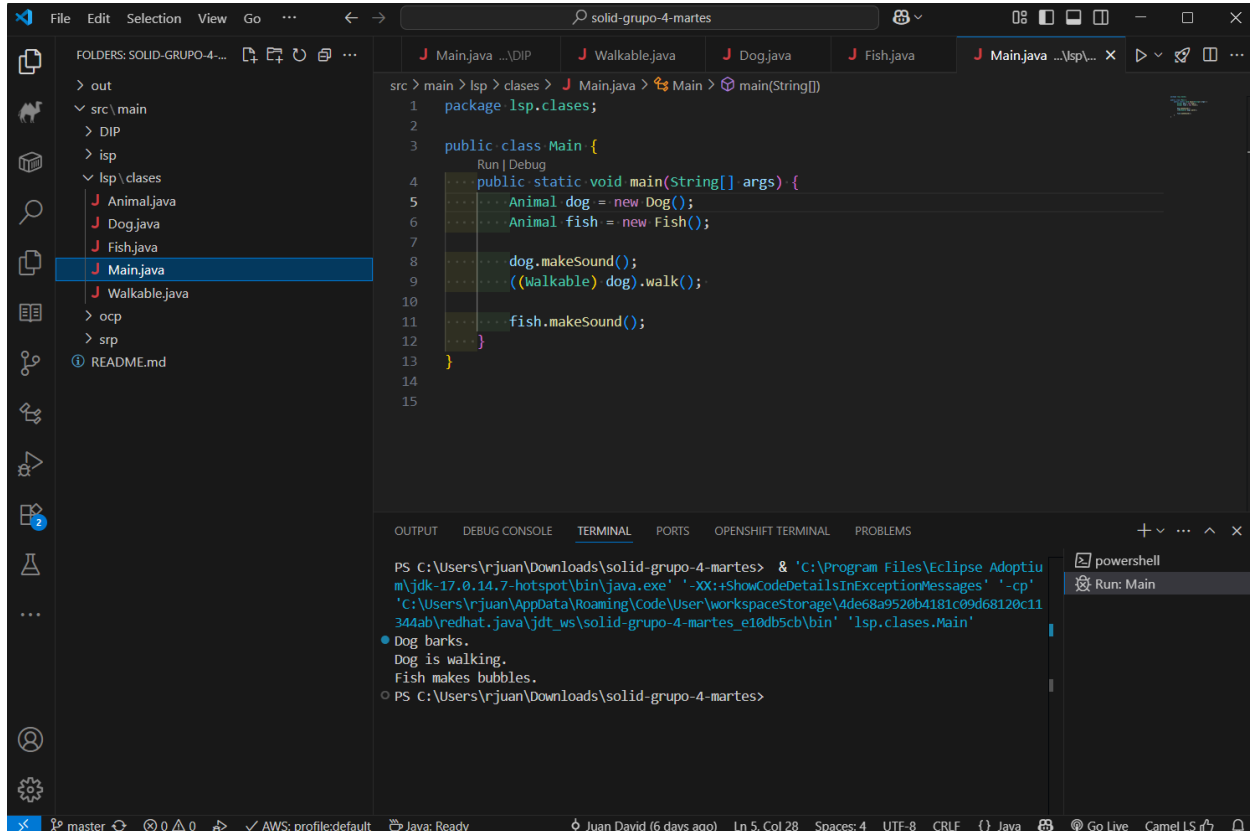
OUTPUT DEBUG CONSOLE TERMINAL PORTS OPENSIFT TERMINAL PROBLEMS

```
PS C:\Users\rjuan\Downloads\solid-grupo-4-martes> & 'C:\Program Files\Eclipse Adoptiu
m\jdk-17.0.14-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp'
'C:\Users\rjuan\AppData\Roaming\Code\User\workspaceStorage\4de68a9520b4181c09d68120c11
344ab\redhat.java\jdt_ws\solid-grupo-4-martes_e10db5cb\bin' 'lsp.clases.Main'
• Dog barks.
  Dog is walking.
  Fish makes bubbles.
○ PS C:\Users\rjuan\Downloads\solid-grupo-4-martes>
```

Run: Main

Ejecución principio LSP

ISP - Interface Segregation Principle

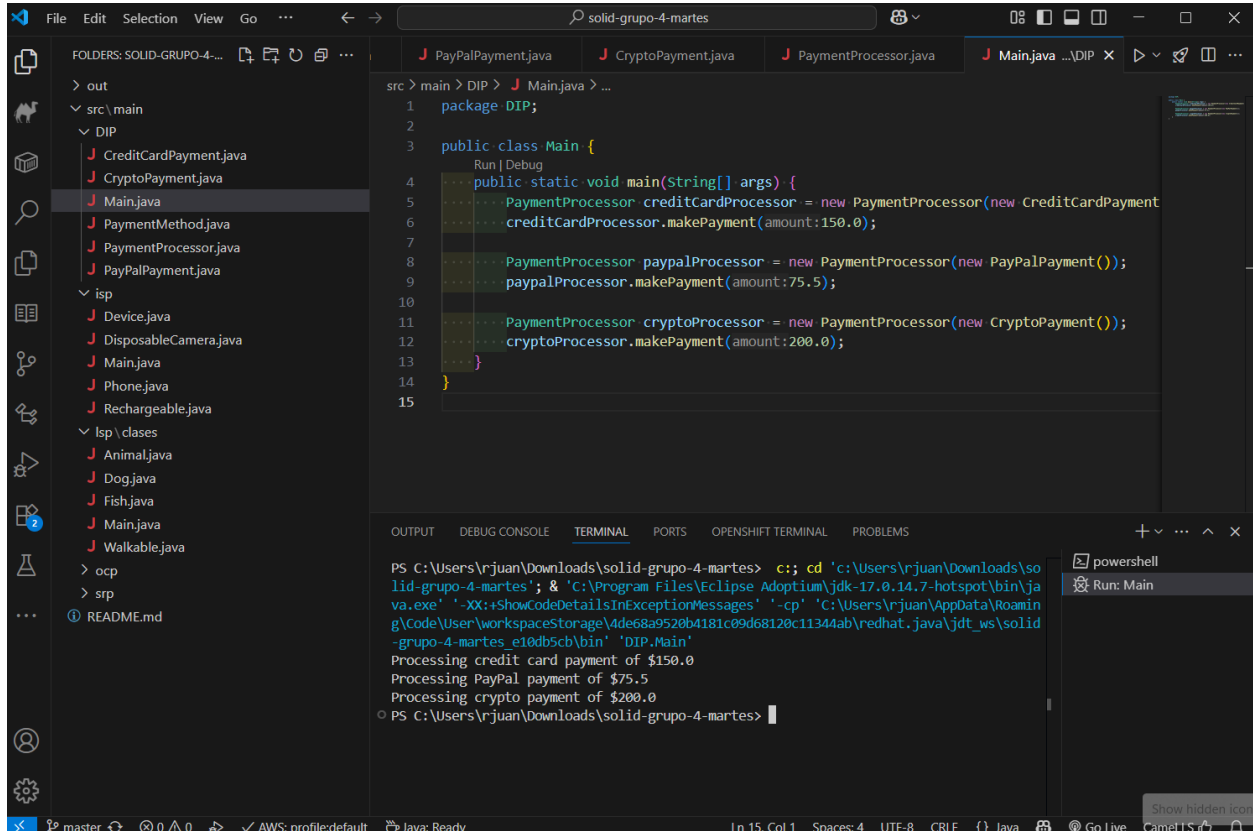


```
src > main > lsp > clases > Main.java > Main > main(String[])
1 package lsp.clases;
2
3 public class Main {
4     ... public static void main(String[] args) {
5         ... Animal dog = new Dog();
6         ... Animal fish = new Fish();
7
8         ... dog.makeSound();
9         ... ((Walkable) dog).walk();
10
11         ... fish.makeSound();
12     }
13 }
14
15
```

```
PS C:\Users\rjuan\Downloads\solid-grupo-4-martes> & 'C:\Program Files\Eclipse Adoptiu
m\jdk-17.0.14.7-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp'
'C:\Users\rjuan\AppData\Roaming\Code\User\workspaceStorage\4de68a9520b4181c09d68120c11
344ab\redhat.java\jdt_ws\solid-grupo-4-martes_e10db5cb\bin' 'lsp.clases.Main'
• Dog barks.
  Dog is walking.
  Fish makes bubbles.
○ PS C:\Users\rjuan\Downloads\solid-grupo-4-martes>
```

Ejecución principio ISP

DIP - Dependency Inversion Principle



The screenshot shows an IDE with the following components:

- Project Explorer:** Shows a project named "solid-grupo-4-martes" with a package "DIP" containing files: CreditCardPayment.java, CryptoPayment.java, Main.java, PaymentMethod.java, PaymentProcessor.java, PayPalPayment.java, Device.java, DisposableCamera.java, Phone.java, Rechargeable.java, Animal.java, Dog.java, Fish.java, Main.java, Walkable.java, and README.md.
- Editor:** Displays the code for "Main.java" in the "DIP" package. The code defines a "Main" class with a "main" method that creates instances of "PaymentProcessor" and "Payment" objects to demonstrate the DIP principle.
- Terminal:** Shows the output of the program execution, which prints the payment amounts for credit card, PayPal, and crypto payments.

```
src > main > DIP > J Main.java > ...
1 package DIP;
2
3 public class Main {
4     Run | Debug
5     public static void main(String[] args) {
6         PaymentProcessor creditCardProcessor = new PaymentProcessor(new CreditCardPayment());
7         creditCardProcessor.makePayment(amount:150.0);
8
9         PaymentProcessor paypalProcessor = new PaymentProcessor(new PayPalPayment());
10        paypalProcessor.makePayment(amount:75.5);
11
12        PaymentProcessor cryptoProcessor = new PaymentProcessor(new CryptoPayment());
13        cryptoProcessor.makePayment(amount:200.0);
14    }
15 }
```

OUTPUT DEBUG CONSOLE TERMINAL PORTS OPENSIFT TERMINAL PROBLEMS

```
PS C:\Users\rjuan\Downloads\solid-grupo-4-martes> c:: cd 'c:\Users\rjuan\Downloads\solid-grupo-4-martes'; & 'C:\Program Files\Eclipse Adoptium\jdk-17.0.14-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\rjuan\AppData\Roaming\Code\User\workspaceStorage\4de68a9520b4181c09d68120c11344ab\redhat.java\jdt_ws\solid-grupo-4-martes_e10db5cb\bin' 'DIP.Main'
Processing credit card payment of $150.0
Processing PayPal payment of $75.5
Processing crypto payment of $200.0
PS C:\Users\rjuan\Downloads\solid-grupo-4-martes>
```

Ejecución principio DIP