CN4001/ CD4001
Software Development
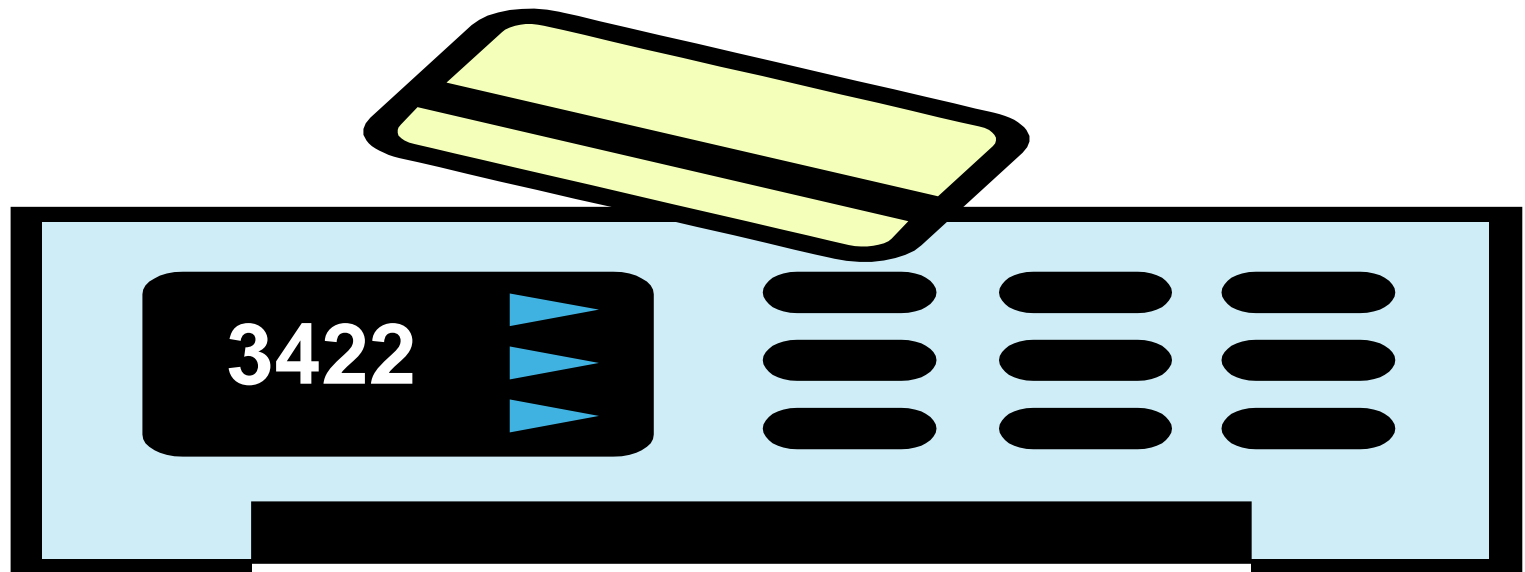# Topic 5: Programming with Loops
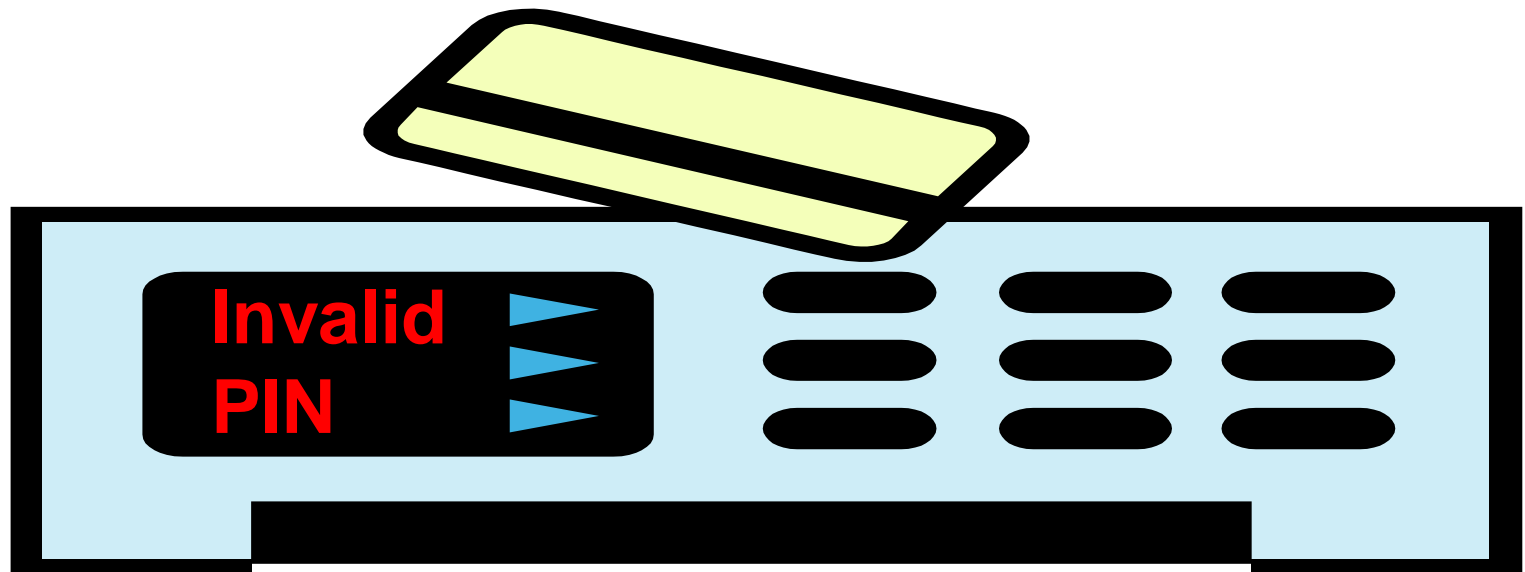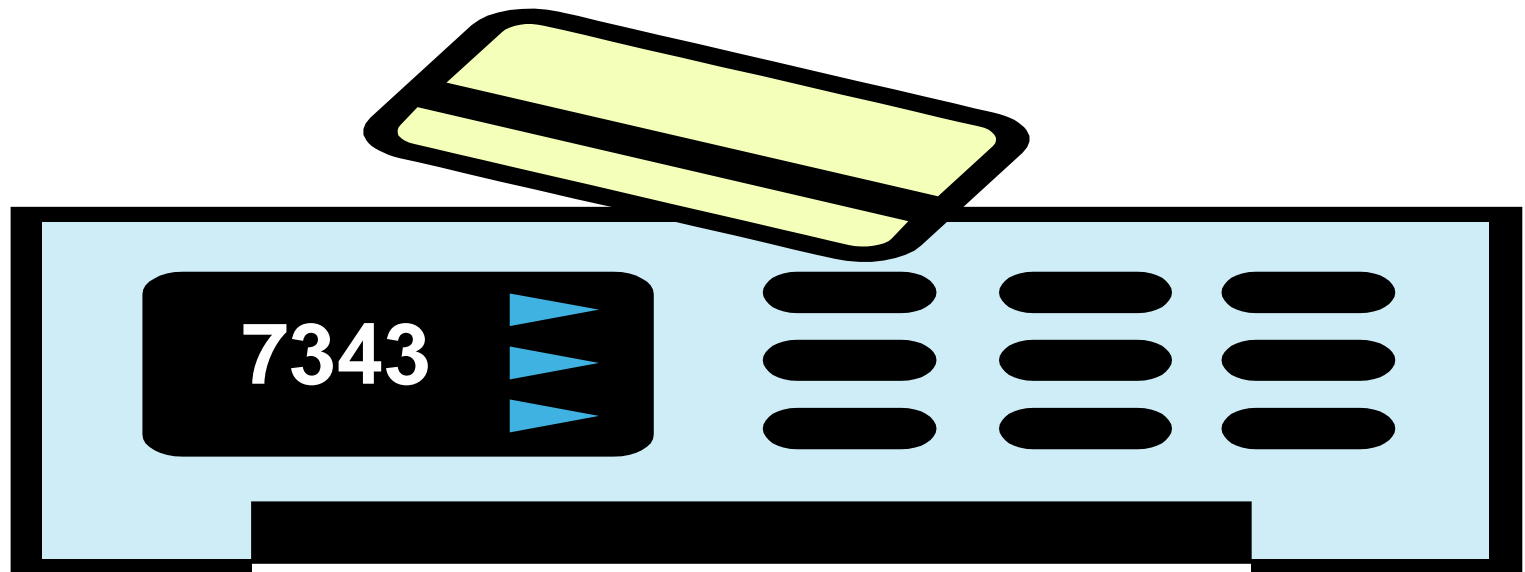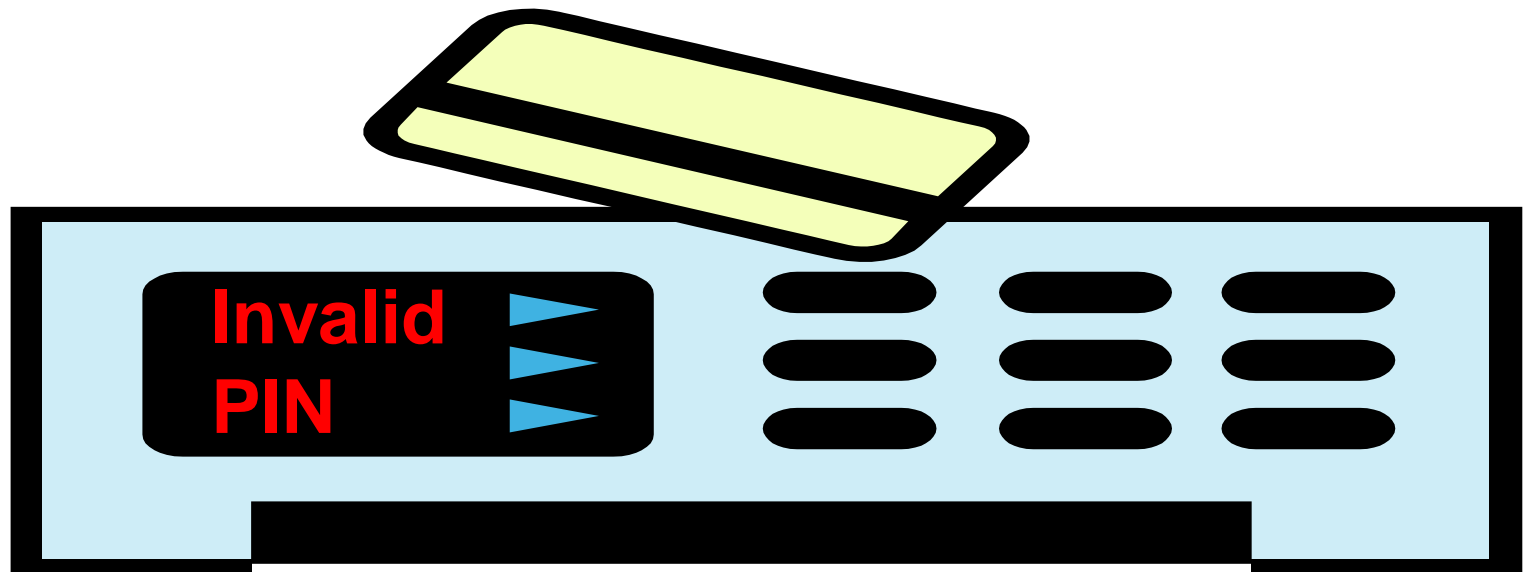# Part 3

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The 'while' loop

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```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );


  System.out.print("Invalid PIN, please re-enter: ");

  pin = sc.nextInt( );

System.out.println("Correct PIN, have some money! ");
```
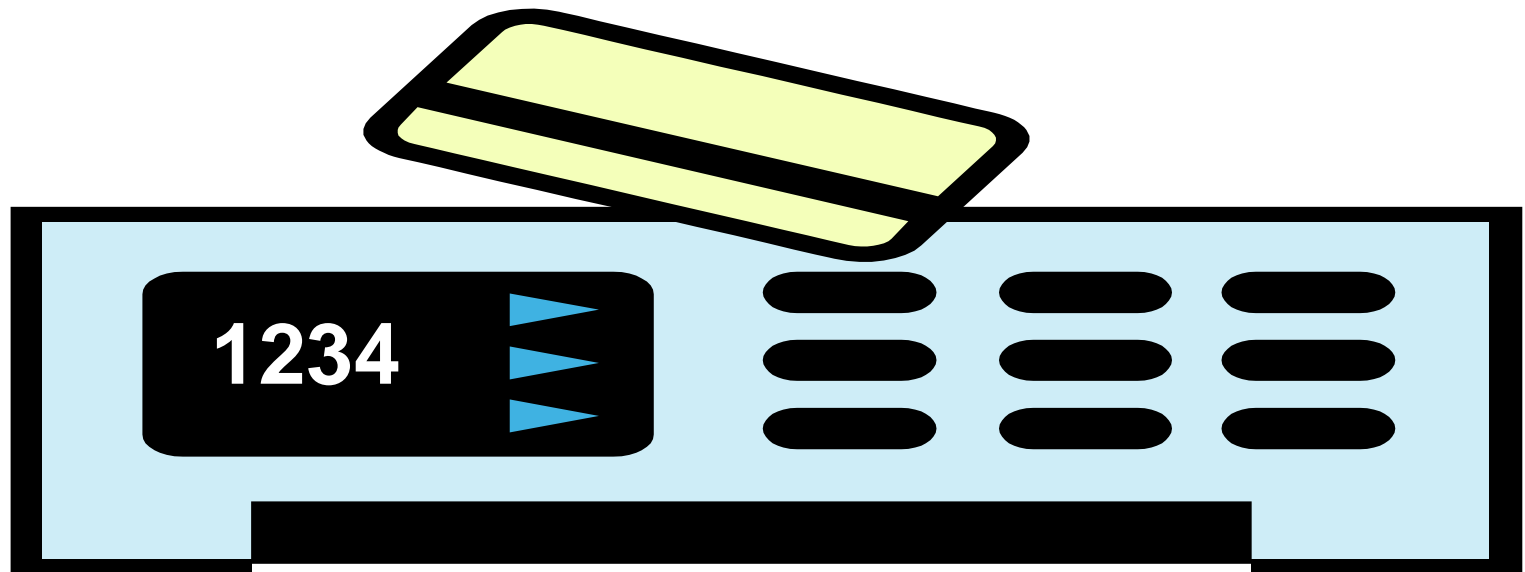
```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (                              )
{
  System.out.print("Invalid PIN, please re-enter: ");

  pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```
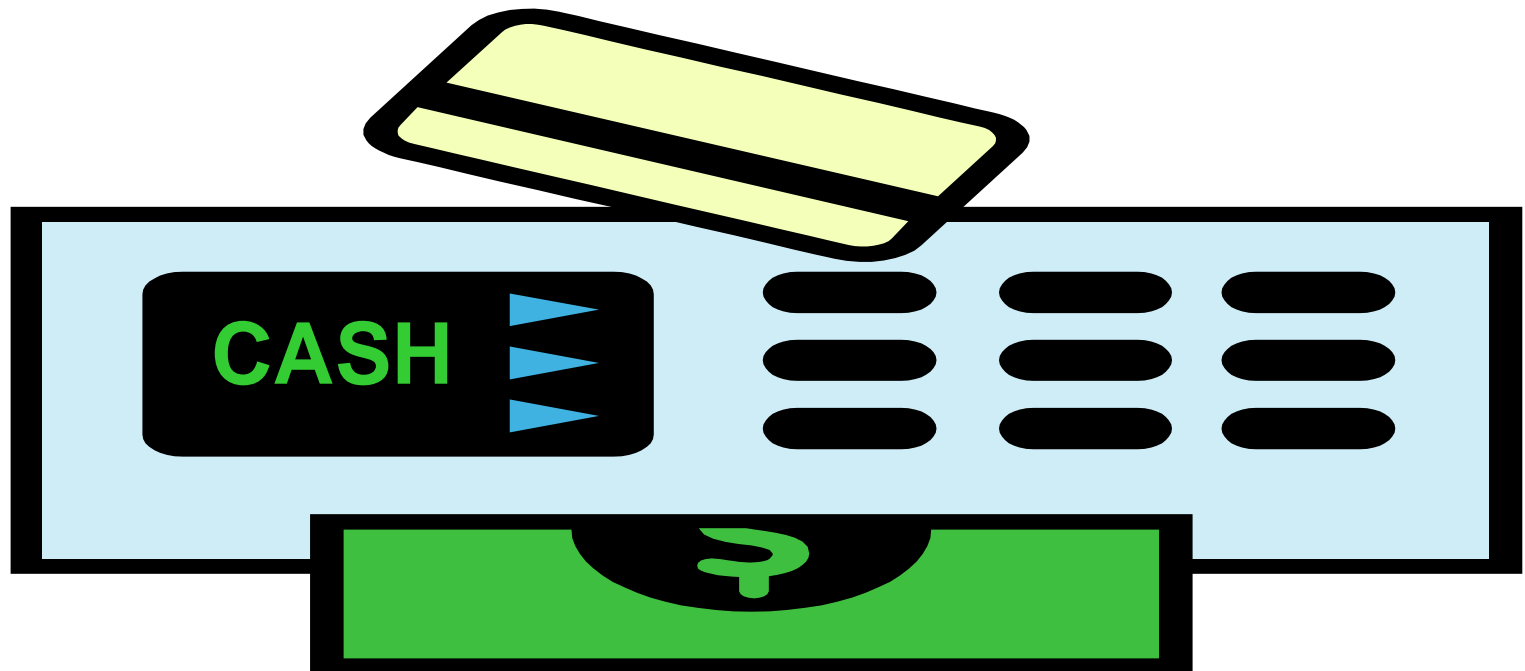
```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (                         )
{
        System.out.print("Invalid PIN, please re-enter: ");

        pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while ( */ test goes here */ )
{
        System.out.print("Invalid PIN, please re-enter: ");

        pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (      pin != 1234          )
{
      System.out.print("Invalid PIN, please re-enter: ");

      pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (     pin != 1234          )
{
     System.out.print("Invalid PIN, please re-enter: ");

     pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```
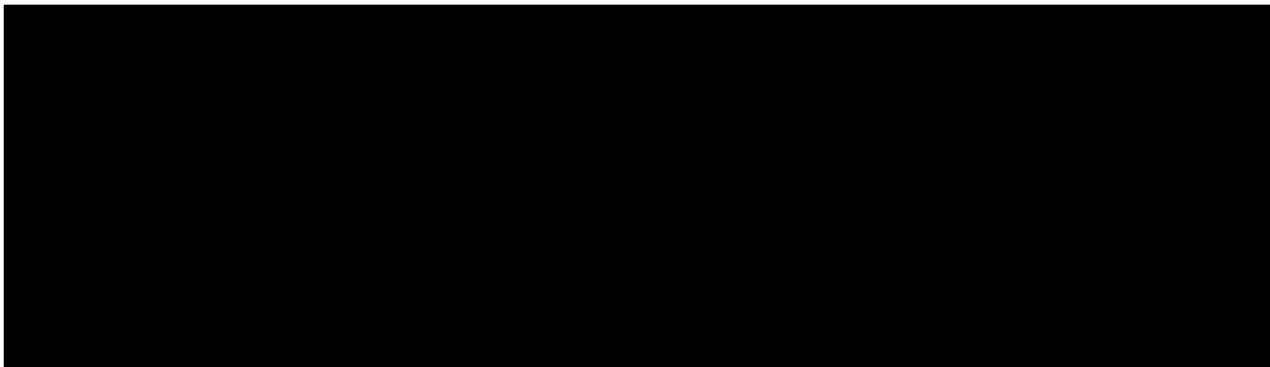
RUN

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (     pin != 1234          )
{
       System.out.print("Invalid PIN, please re-enter: ");

       pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (      pin != 1234          )
{
      System.out.print("Invalid PIN, please re-enter: ");

      pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

```java
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (      pin != 1234           )
{
      System.out.print("Invalid PIN, please re-enter: ");

      pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

**Enter PIN:**

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (      pin != 1234           )
{
      System.out.print("Invalid PIN, please re-enter: ");

      pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

Enter PIN:

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (      pin != 1234            )
{
      System.out.print("Invalid PIN, please re-enter: ");

      pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

```
Enter PIN:   1234
```

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (      pin != 1234          )
{
        System.out.print("Invalid PIN, please re-enter: ");

        pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

```
Enter PIN:   1234
```

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (      pin != 1234            )
{
     System.out.print("Invalid PIN, please re-enter: ");

     pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

Enter PIN: 1234

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (     pin != 1234          )
{
     System.out.print("Invalid PIN, please re-enter: ");

     pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

```
Enter PIN:   1234

Correct PIN, have some money!
```
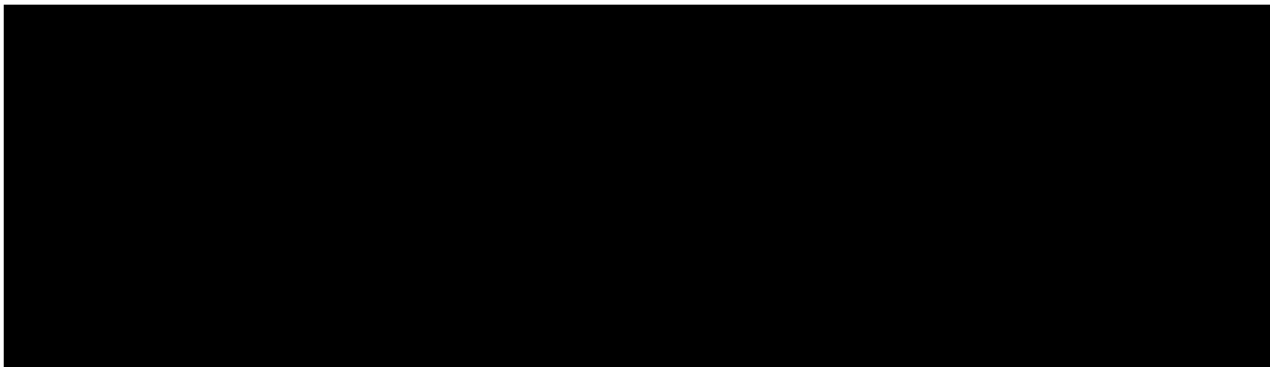
```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (      pin != 1234            )
{
      System.out.print("Invalid PIN, please re-enter: ");

      pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

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```java
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (     pin != 1234          )
{
     System.out.print("Invalid PIN, please re-enter: ");

     pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

Enter PIN:

```java
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (      pin != 1234           )
{
        System.out.print("Invalid PIN, please re-enter: ");

        pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

Enter PIN:

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (     pin != 1234          )
{
        System.out.print("Invalid PIN, please re-enter: ");

        pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

Enter PIN: 5555

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (      pin != 1234            )
{
      System.out.print("Invalid PIN, please re-enter: ");

      pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

Enter PIN: 5555

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (     pin != 1234           )
{
        System.out.print("Invalid PIN, please re-enter: ");

        pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

Enter PIN: 5555

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (     pin != 1234          )
{
        System.out.print("Invalid PIN, please re-enter: ");

        pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

```
Enter PIN:   5555
Invalid PIN, please re-enter:
```

```java
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (      pin != 1234          )
{
        System.out.print("Invalid PIN, please re-enter: ");

        pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

```
Enter PIN:   5555
Invalid PIN, please re-enter:
```

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (      pin != 1234           )
{
      System.out.print("Invalid PIN, please re-enter: ");

      pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

Enter PIN: 5555
Invalid PIN, please re-enter: 4321

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (     pin != 1234          )
{
     System.out.print("Invalid PIN, please re-enter: ");

     pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

```
Enter PIN:   5555
Invalid PIN, please re-enter:   4321
```

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```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (     pin != 1234         )
{
     System.out.print("Invalid PIN, please re-enter: ");

     pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

```
Enter PIN:   5555
Invalid PIN, please re-enter:   4321
```

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (     pin != 1234          )
{
    System.out.print("Invalid PIN, please re-enter: ");

    pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

```
Enter PIN:   5555
Invalid PIN, please re-enter:   4321
Invalid PIN, please re-enter:
```

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (     pin != 1234          )
{
     System.out.print("Invalid PIN, please re-enter: ");

     pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

```
Enter PIN:   5555
Invalid PIN, please re-enter:   4321
Invalid PIN, please re-enter:
```

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (     pin != 1234          )
{
     System.out.print("Invalid PIN, please re-enter: ");

     pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

```
Enter PIN:   5555
Invalid PIN, please re-enter:   4321
Invalid PIN, please re-enter:   1234
```

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (     pin != 1234          )
{
      System.out.print("Invalid PIN, please re-enter: ");

      pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

```
Enter PIN:   5555
Invalid PIN, please re-enter:   4321
Invalid PIN, please re-enter:   1234
```

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```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (      pin != 1234           )
{
       System.out.print("Invalid PIN, please re-enter: ");

       pin = sc.nextInt( );
}
System.out.println("Correct PIN, have some money! ");
```

```
Enter PIN:   5555
Invalid PIN, please re-enter:   4321
Invalid PIN, please re-enter:   1234
```

```
System.out.print("Enter PIN: ");

pin = sc.nextInt( );
while (     pin != 1234          )
{
      System.out.print("Invalid PIN, please re-enter: ");

      pin = sc.nextInt( );
}

System.out.println("Correct PIN, have some money! ");
```

```
Enter PIN:   5555
Invalid PIN, please re-enter:   4321
Invalid PIN, please re-enter:   1234
Correct PIN, have some money!
```

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Input **Validation**

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```java
import java.util.*;
public class DisplayResult
{
  public static void main(String[] args)
  {
    int mark;
    Scanner sc = new Scanner (System.in);
    System.out.println("What exam mark did you get?");
    mark = sc.nextInt();
    if (mark >= 40)
    {
        System.out.println("Congratulations, you passed");
    }
    else
    {
        System.out.println("I'm sorry, but you failed");
    }
    System.out.println("Good luck with your other exams");
  }
}
```

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```java
import java.util.*;
public class DisplayResult
{
  public static void main(String[] args)
  {
   int mark;
   Scanner sc = new Scanner (System.in);
   System.out.println("What exam mark did you get?");
   mark = sc.nextInt();
```

CHECK MARK HERE

```java
   if (mark >= 40)
   {
        System.out.println("Congratulations, you passed");
   }
   else
   {
        System.out.println("I'm sorry, but you failed");
   }
   System.out.println("Good luck with your other exams");
  }
}
```

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```
System.out.println("What exam mark did you get?");

mark = sc.nextInt( );


   CHECK MARK HERE


if (mark >= 40)
{
     System.out.println("Congratulations, you passed");
}
else
{
     System.out.println("I'm sorry, but you failed");
}
System.out.println("Good luck with your other exams");
```

```java
System.out.println("What exam mark did you get?");

mark = sc.nextInt( );


System.out.println("Invalid mark: please re-enter");
mark = sc.nextInt( );

if (mark >= 40)
{
      System.out.println("Congratulations, you passed");
}
else
{
      System.out.println("I'm sorry, but you failed");
}
System.out.println("Good luck with your other exams");
```

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```java
System.out.println("What exam mark did you get?");

mark = sc.nextInt( );
while (                                    )
{
System.out.println("Invalid mark: please re-enter");
mark = sc.nextInt( );
}
if (mark >= 40)
{
     System.out.println("Congratulations, you passed");
}
else
{
     System.out.println("I'm sorry, but you failed");
}
System.out.println("Good luck with your other exams");
```

```java
System.out.println("What exam mark did you get?");

mark = sc.nextInt( );
while (                              )

{
    System.out.println("Invalid mark: please re-enter");
    mark = sc.nextInt( );
}
if (mark >= 40)
{
    System.out.println("Congratulations, you passed");
}
else
{
    System.out.println("I'm sorry, but you failed");
}
System.out.println("Good luck with your other exams");
```

```java
System.out.println("What exam mark did you get?");

mark = sc.nextInt( );
while (   mark < 0      ||    mark > 100    )
{
    System.out.println("Invalid mark: please re-enter");
    mark = sc.nextInt( );
}
if (mark >= 40)
{
    System.out.println("Congratulations, you passed");
}
else
{
     System.out.println("I'm sorry, but you failed");
}
System.out.println("Good luck with your other exams");
```

Sample Program Run

What exam mark did you get?

101

Invalid mark: please re-enter

-10

Invalid mark: please re-enter

10

I'm sorry, but you failed

Good luck with your other exams

Sample Program Run

What exam mark did you get?

65

Congratulations, you passed

Good luck with your other exams