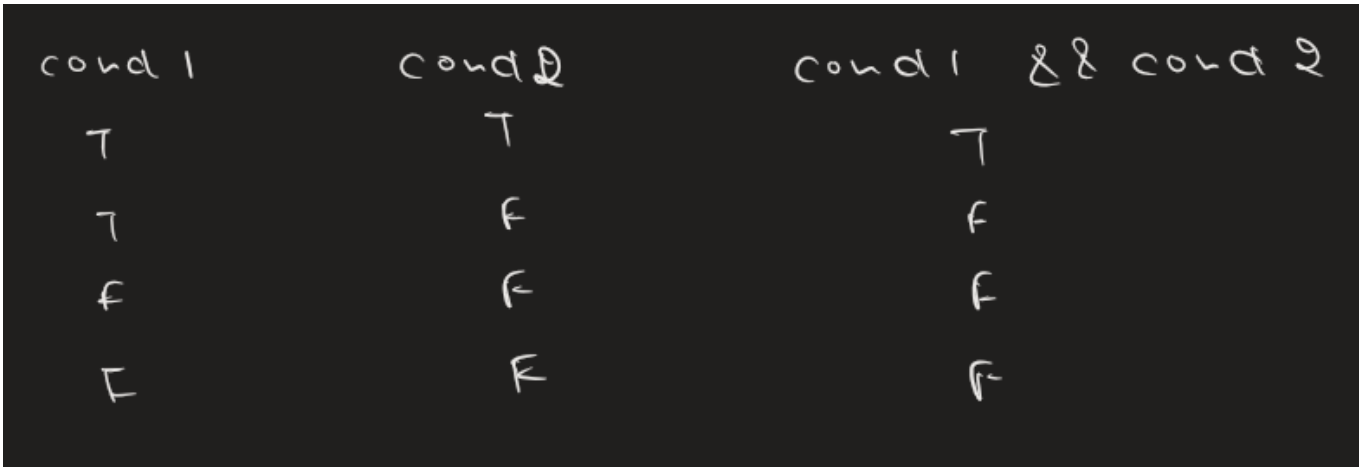
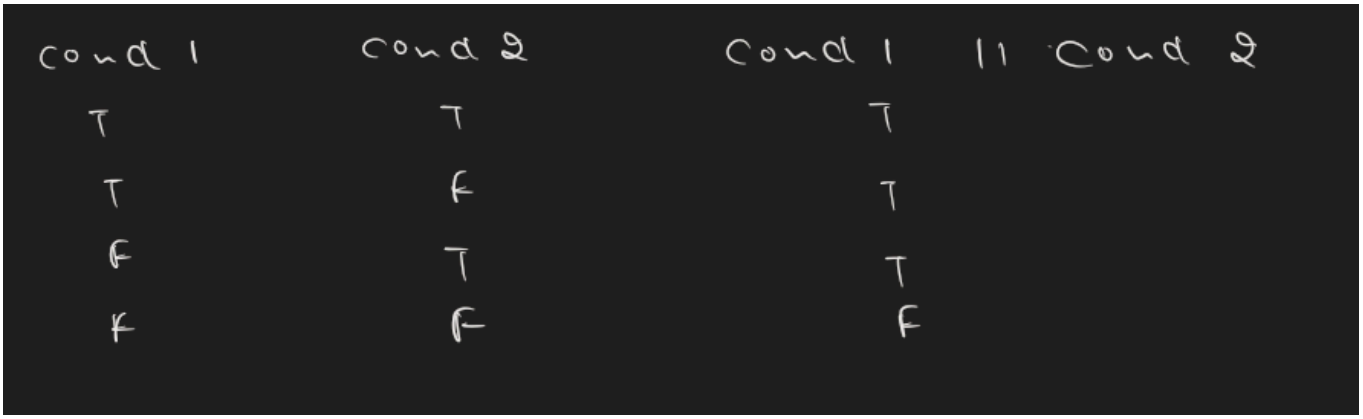
⚖️ 4. Comparison & Logical Operators

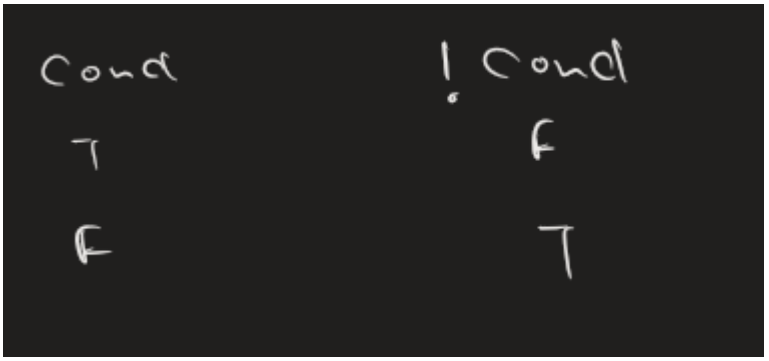
Comparison Operator	Name	Example
`==`	Equal to	`x == y`
`!=`	Not equal	`x != y`
`>`	Greater than	`x > y`
`<`	Less than	`x < y`
`>=`	Greater or equal	`x >= y`
`<=`	Less or equal	`x <= y`

Logical operators are used to determine the logic between variables or values, by combining multiple conditions:

Logical Operator	Name	Description	Example
&&	Logical and	Returns true if both statements are true	x < 5 && x < 10
||	Logical or	Returns true if one of the statements is true	x < 5 || x < 4
!	Logical not	Reverse the result, returns false if the result is true	!(x < 5 && x < 10)

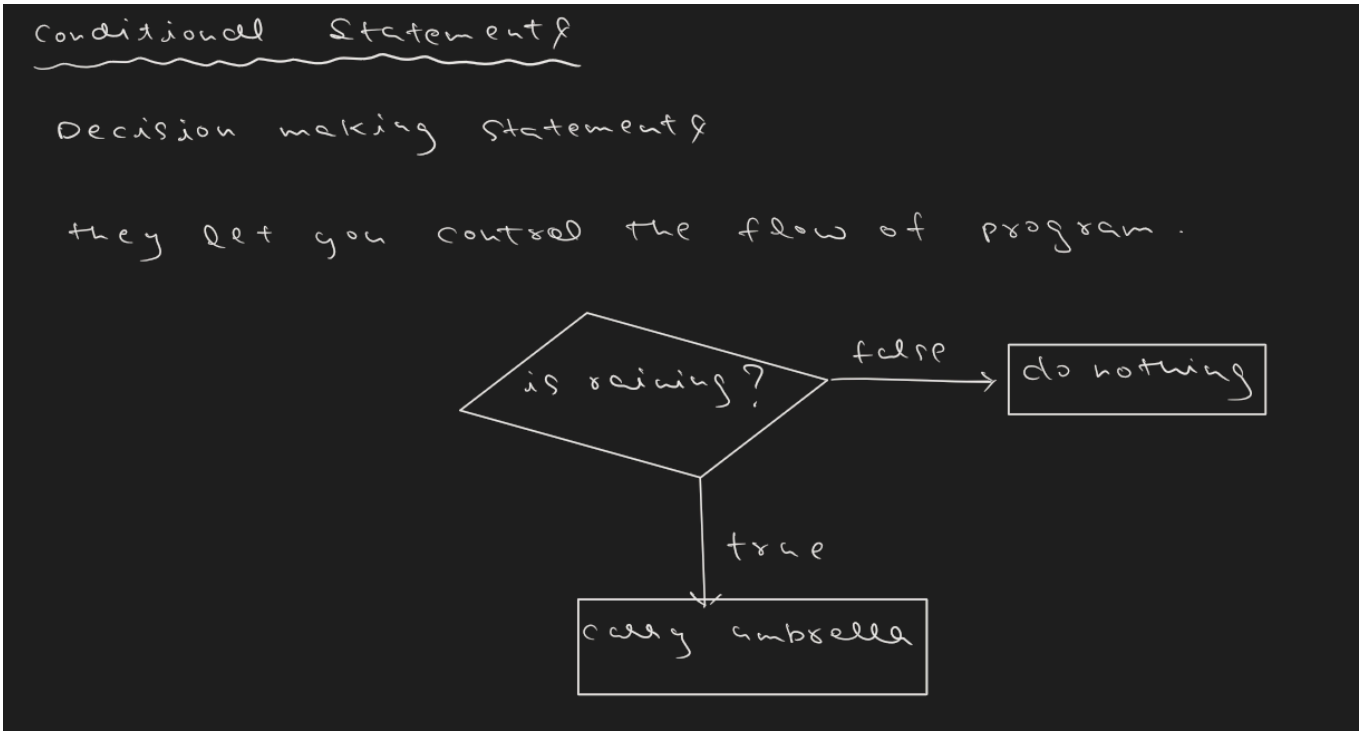




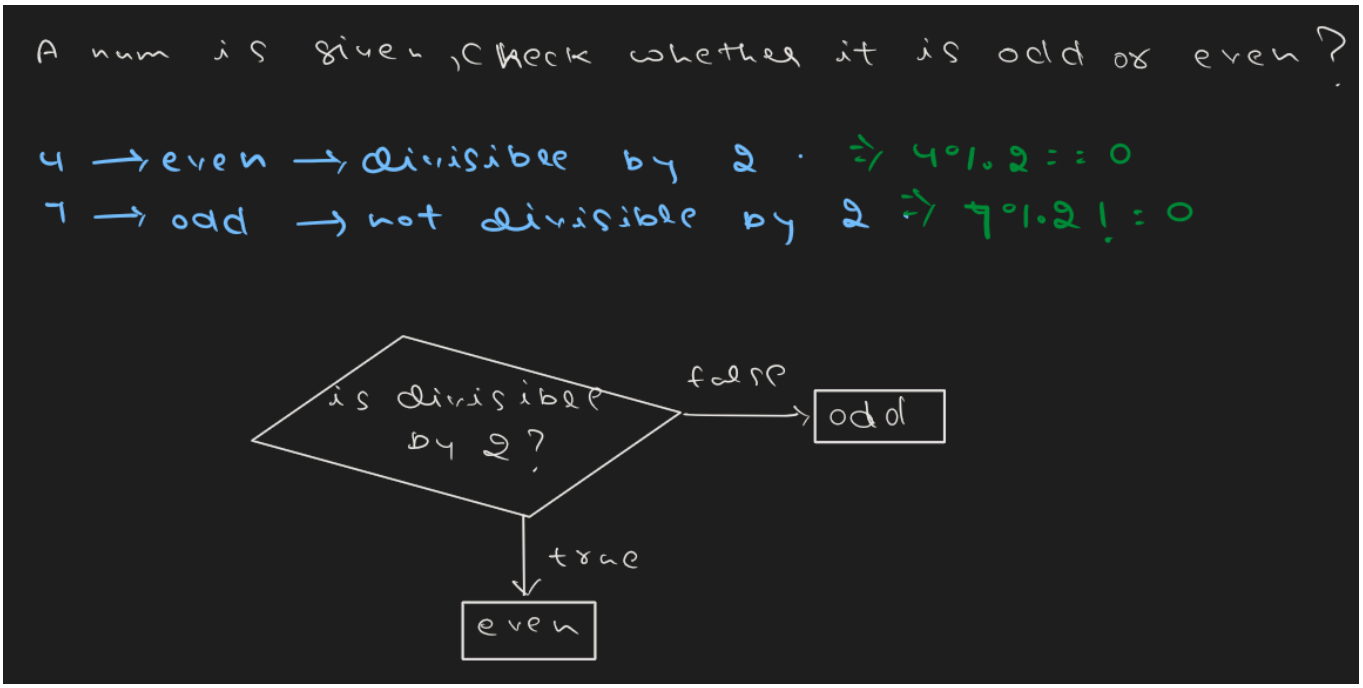


🧩 5. Conditional Statements (Decision Making)

- ➔ Conditions and if statements let you control the flow of your program - deciding which code runs, and which code is skipped.
- ➔ Think of it like real life: If it rains, take an umbrella. Otherwise, do nothing.
- ➔ Every if statement needs a condition that results in true or false.
- ➔ This means if statements work hand-in-hand with boolean values

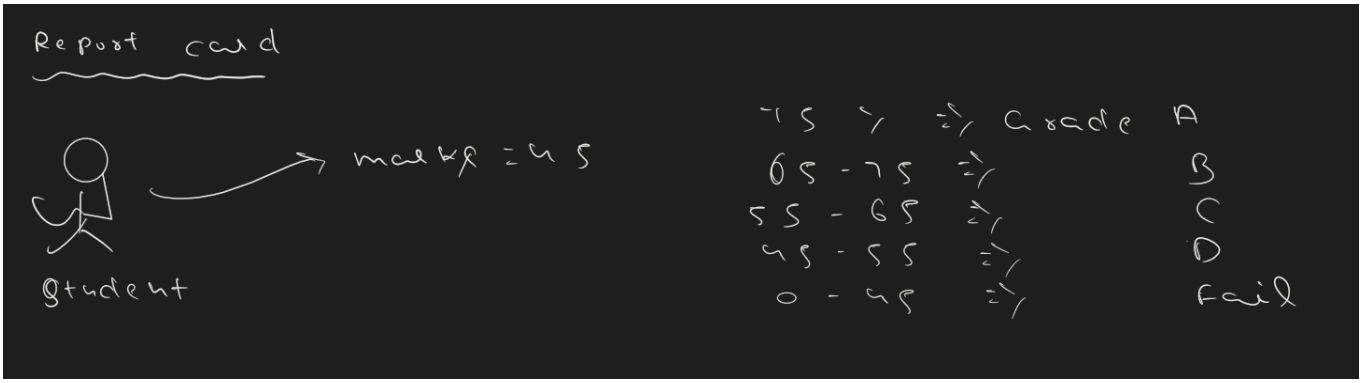


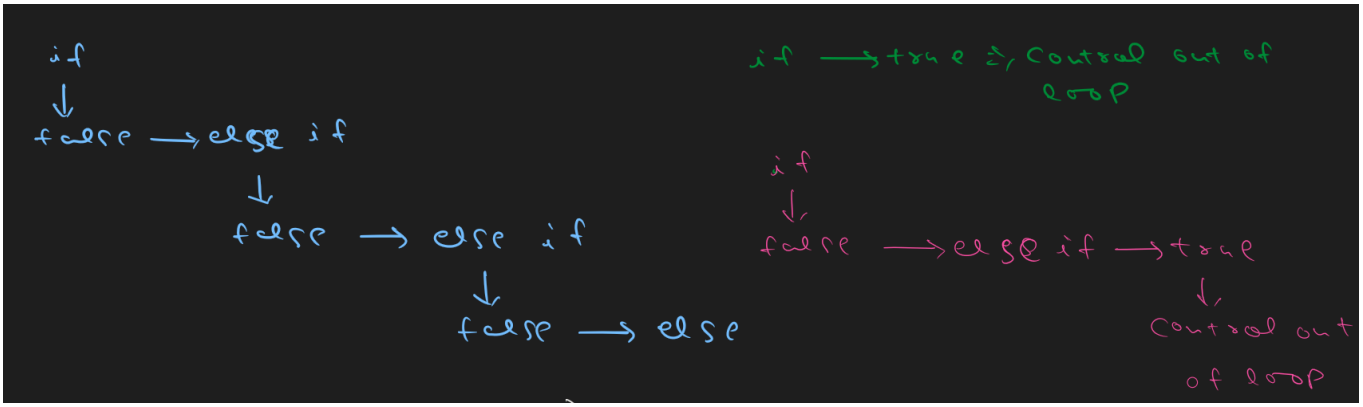
🎯 Find whether number is odd or even

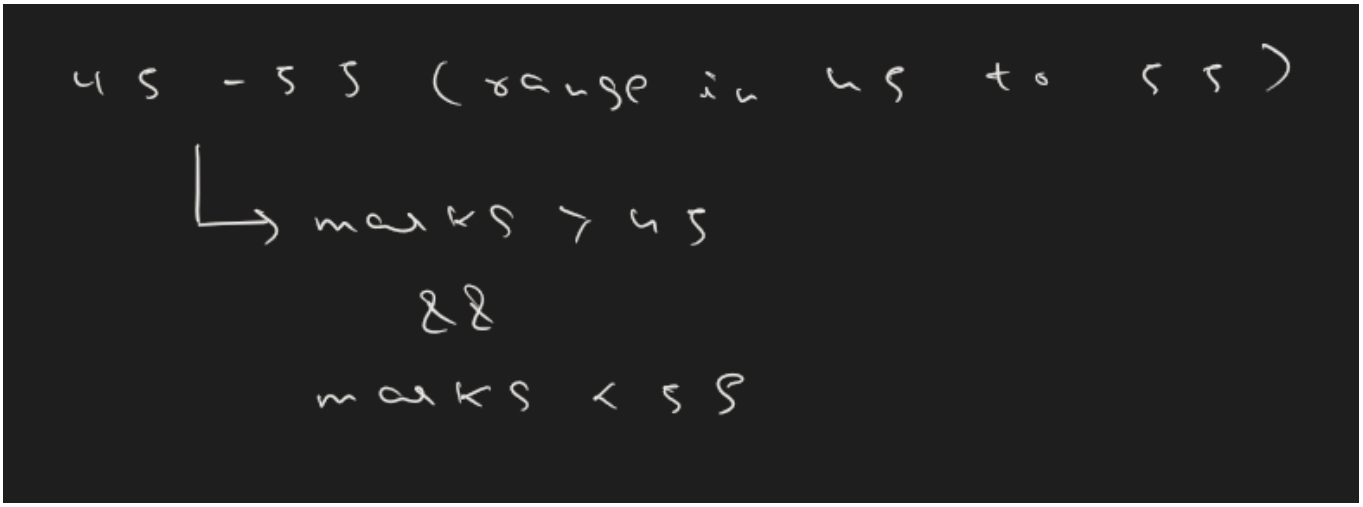



```java
public class OddEven {
	public static void main(String[] args) {
		int n = 7;
		if (n > 51) {
			System.out.println("Hello Akarsh");
		}
		if (n % 2 == 0) {

			System.out.println("Even");
		} else {
			System.out.println("Odd");
		}
		System.out.println("Bye Akarsh");
	}

}
```

🎯 Grade Card







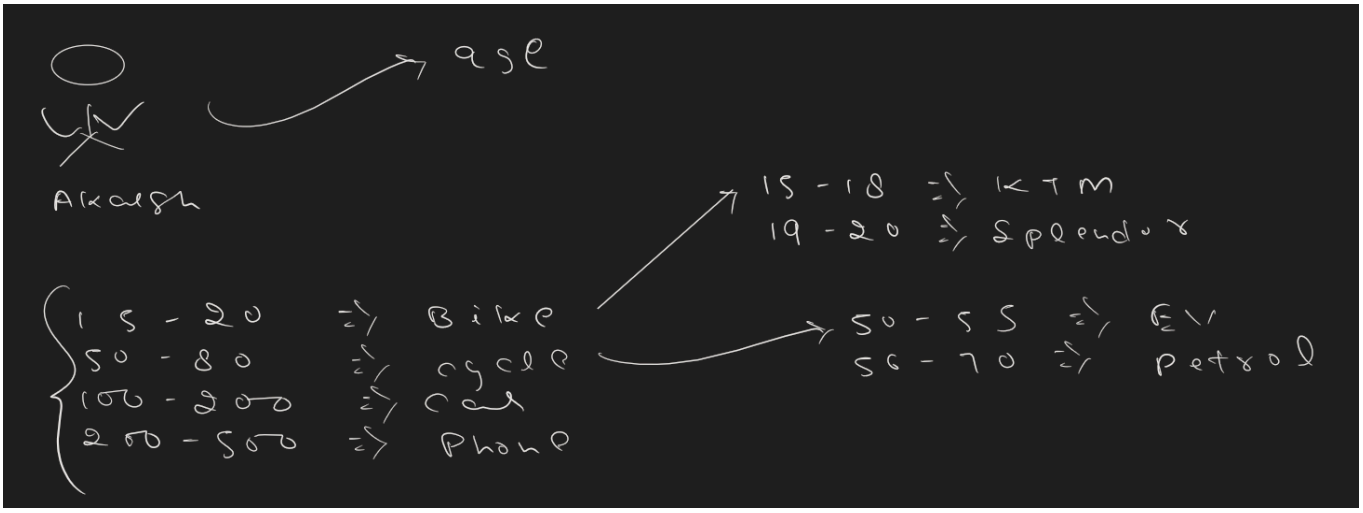

```java
public class GardeCard {
	public static void main(String[] args) {
		int m = 57;
		if (m >= 75) {
			System.out.println("A");
		} else if (m >= 65 && m < 75) {
			System.out.println("B");
		} else if (m >= 55 && m < 65) {
			System.out.println("C");
		} else if (m >= 45 && m < 55) {
			System.out.println("Pass");
		} else {
			System.out.println("fail");
		}
	}
}
```

🎯 Lottery Birthday Gift

```java
public class LotteryGame {
	public static void main(String[] args) {
		int num = 79;
		if (num >= 15 && num <= 20) {
			System.out.println("Bike");
		} else if (num >= 50 && num <= 80) {
			System.out.println("Cycle");
		} else if (num >= 100 && num <= 200) {
```

```
                System.out.println("Car");
            } else if (num >= 250 && num <= 300) {
                System.out.println("Mac");
            } else if (num >= 1200 && num <= 1400) {
                System.out.println("Kurkure");
            } else {
                System.out.println("Haapy birthday!!!");
            }
        }

}
```

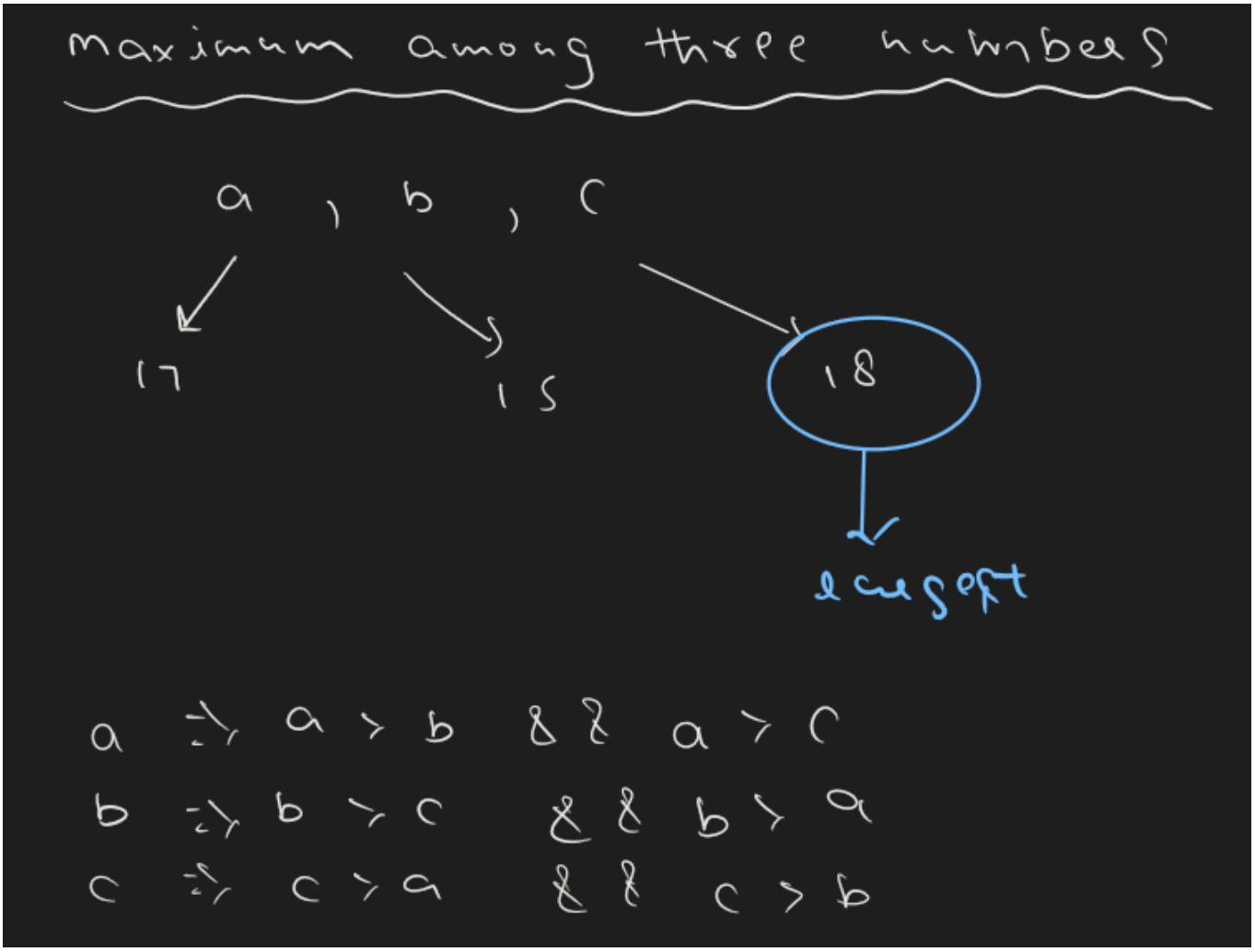
🎯 Lottery Birthday Gift Advance




```
public class LotterryGame2 {
    public static void main(String[] args) {
        int num = 79;
        if (num >= 15 && num <= 20) {
            System.out.println("Bike");
            // ktm hero
            if (num >= 15 && num <= 18) {
                System.out.println("KTM");
            } else {
                System.out.println("hero");
            }
        } else if (num >= 50 && num <= 80) {
            System.out.println("Cycle");
            if (num >= 50 && num <= 70) {
                System.out.println("Nornal Cycle");
            } else {
                System.out.println("Gear Cycle");
            }
        } else if (num >= 100 && num <= 200) {
            System.out.println("Car");
            if (num >= 100 && num <= 150) {
                System.out.println("Creta");
            } else {
                System.out.println("Thar");
```

```
                }
            } else if (num >= 250 && num <= 300) {
                System.out.println("Mac");
                if (num >= 250 && num <= 280) {
                    System.out.println("M1 Mac");
                } else {
                    System.out.println("M4 MAC");
                }
            } else if (num >= 1200 && num <= 1400) {
                System.out.println("Kurkure");
            } else {
                System.out.println("Happay birthday!!!");
            }

    }

}
```

🎯 Maximum among three numbers

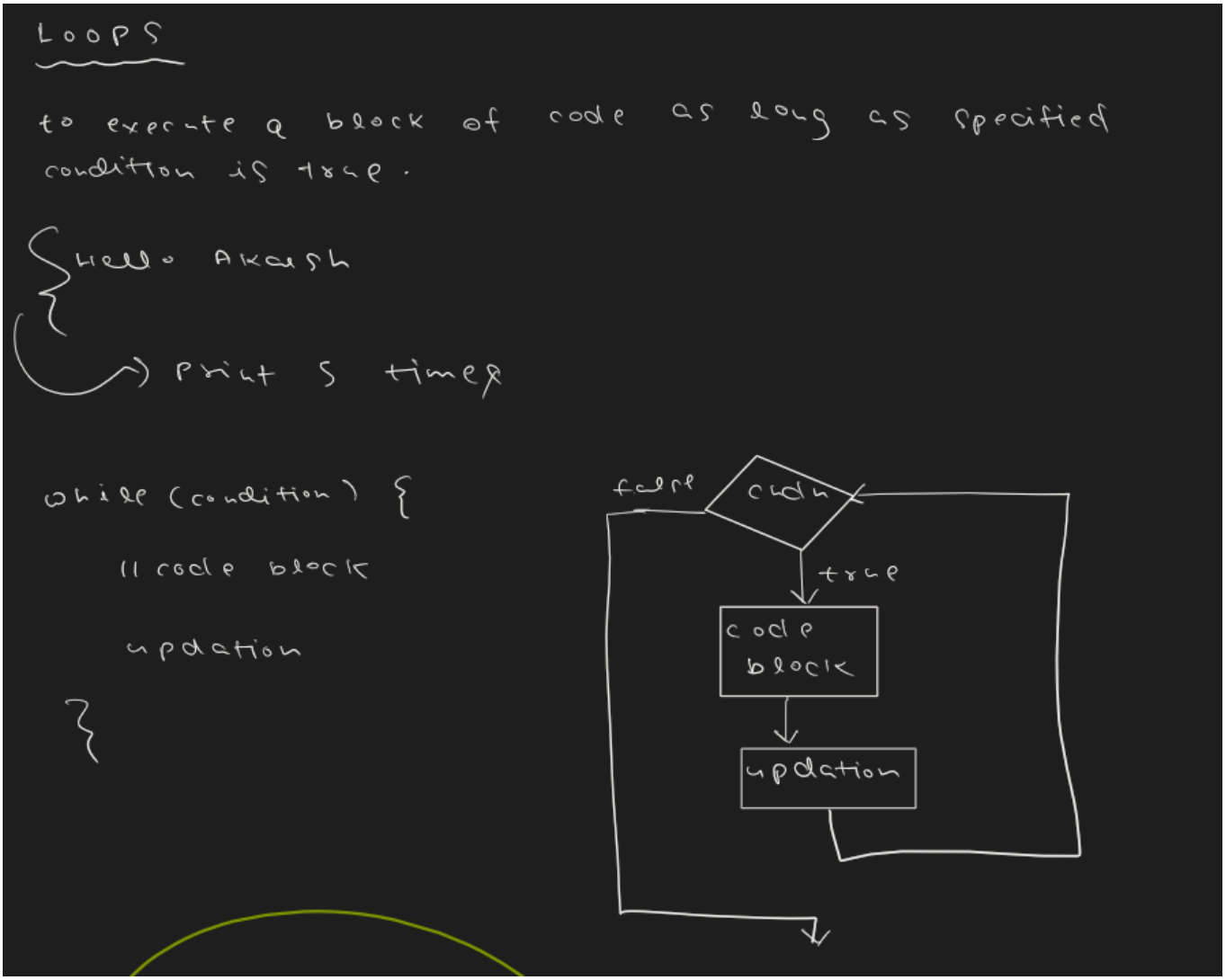



```
public class MaximumOfThreeNumber {
    public static void main(String[] args) {
        int a = 17;
        int b = 11;
        int c = 15;
```

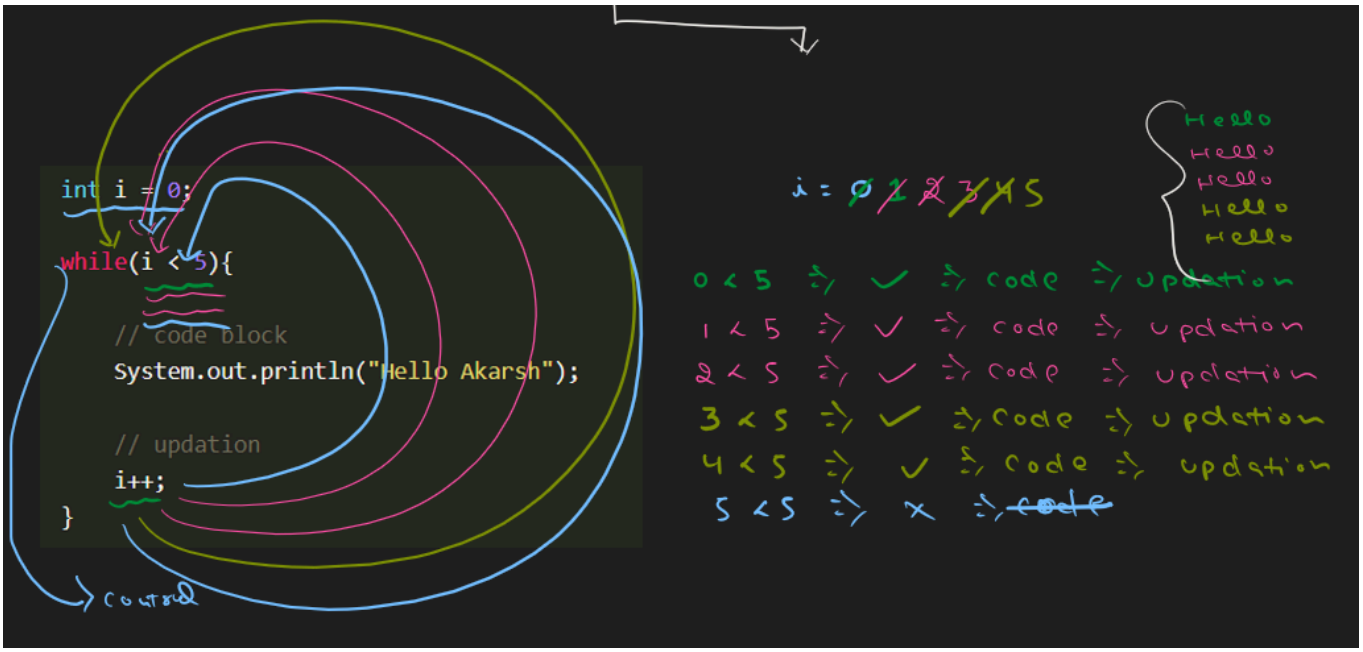
```
            if(a>=b && a>=c) {
                  System.out.println(a);
            }
            else if(b>=a && b>=c) {
                  System.out.println(b);
            }
            else {
                  System.out.println(c);
            }

      }

}
```

🔁 6. Loops and Iteration

➔ Loops can execute a block of code as long as a specified condition is true.
➔ Loops are handy because they save time, reduce errors, and they make code more readable.

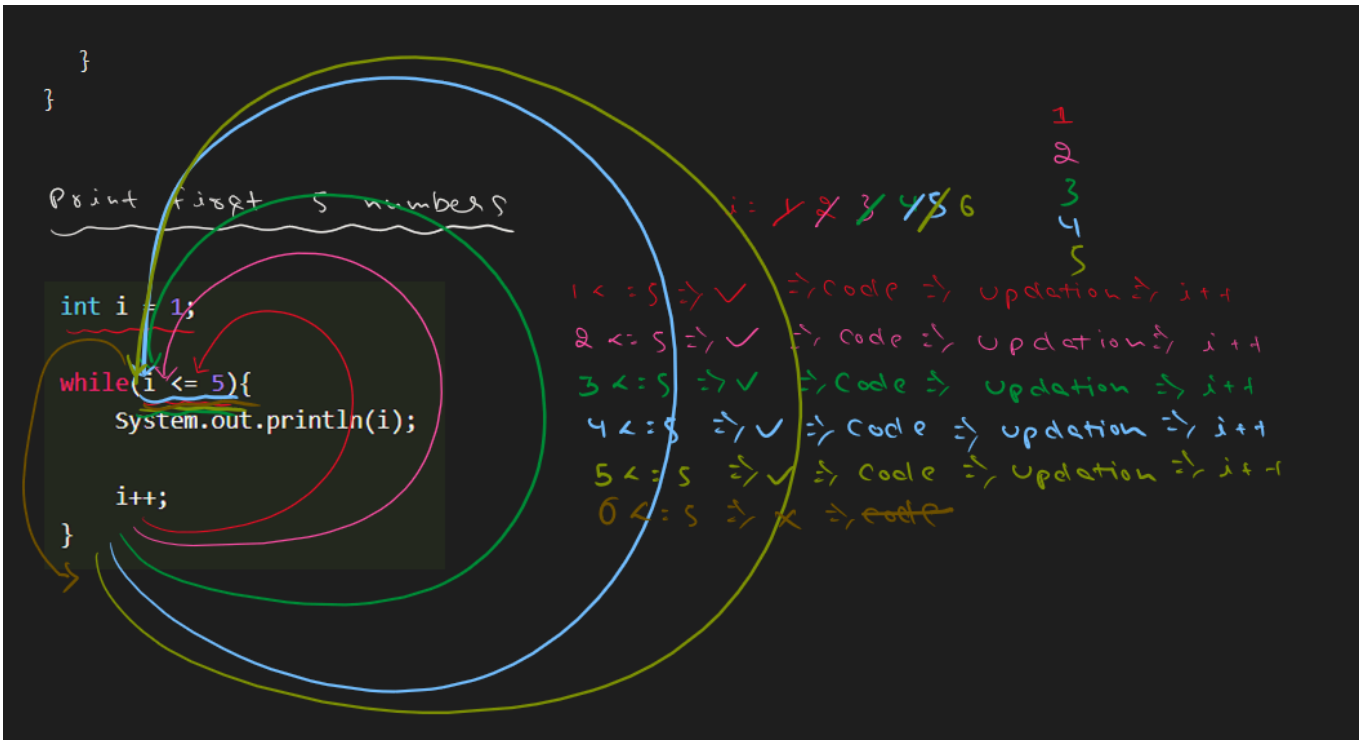


🎯 Print Hello 5 times



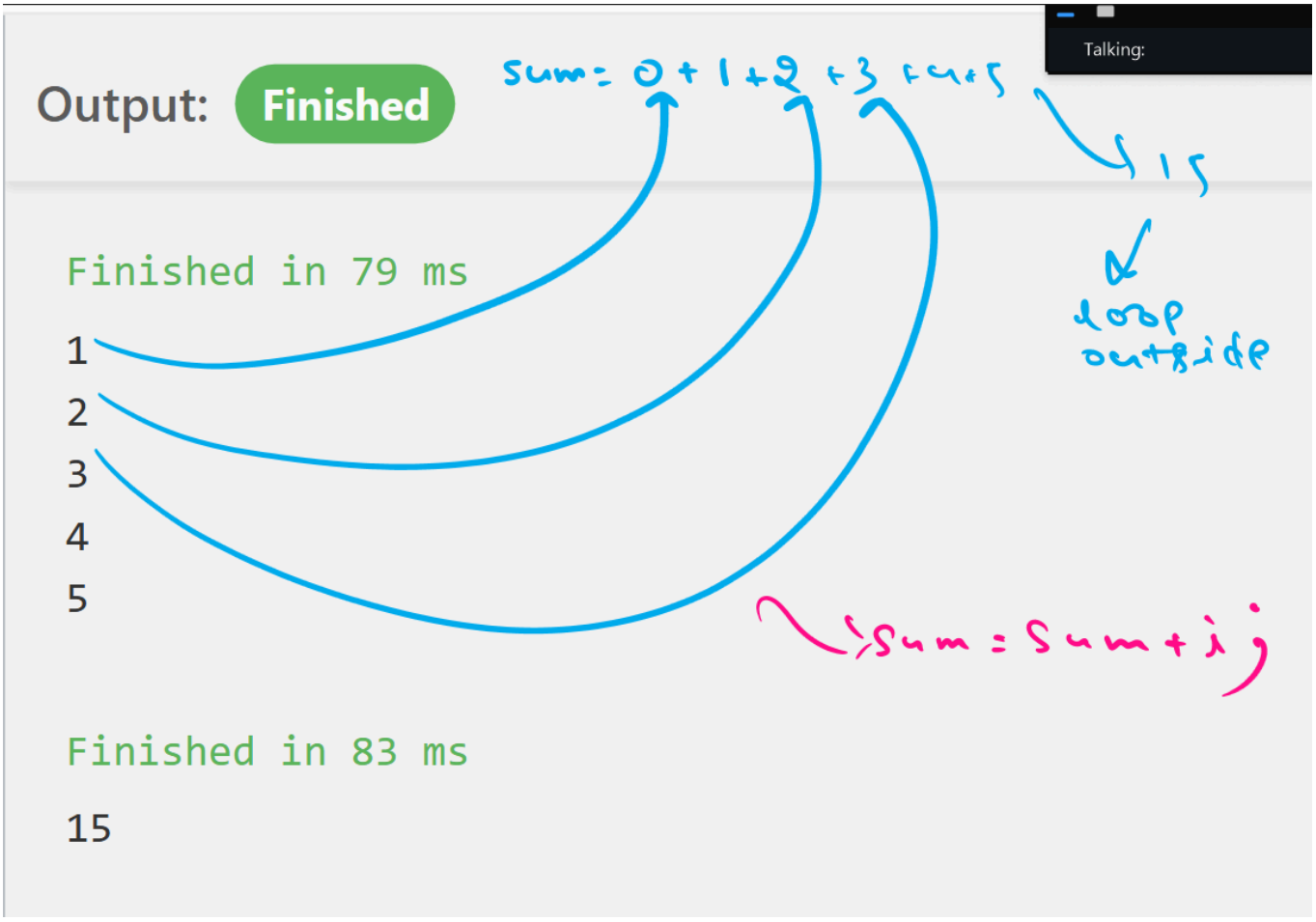

```java
public class LoopsDemo {
    public static void main(String[] args) {
        int i = 1;
        while (i <= 5) {
            System.out.println("hello");
            i++;
        }
    }

}
```

🎯 Print First 5 Numbers



```java
public class PrintNumbers {
    public static void main(String[] args) {
        int n = 5;
        int i = 1;
        while (i <= n) {
            System.out.println(i);
            i++;
        }
    }

}
```

🎯 Print Sum of N Numbers




```java
public class SumOfNNumbers {
    public static void main(String[] args) {
        int n = 5, i = 1, sum = 0;
        while (i <= n) {
            sum = sum + i;
            i++;
        }
        System.out.println(sum);
    }

}
```

💰 7. Practical Example – Simple Interest

```
public class SimpleInterest {
    public static void main(String[] args) {
        int p = 1000, r = 5, t = 2;
        int si = (p * r * t) / 100;
        System.out.println("Simple Interest = " + si);
    }

}
```