

1.project:

```
public class Inventory {  
    private int itemNumber;  
    private String name;  
    private int numberOfUnits;  
    private int price;  
  
    // Default constructor  
    public Inventory() {  
        this.itemNumber = 0;  
        this.name = "0";  
        this.numberOfUnits = 0;  
        this.price = 0;  
    }  
  
    // Parameterized constructor  
    public Inventory(int itemNumber, String name, int numberOfUnits, int price) {  
        this.itemNumber = itemNumber;  
        this.name = name;  
        this.numberOfUnits = numberOfUnits;  
        this.price = price;  
    }  
  
    // Method to set values  
    public void set(int itemNumber, String name, int numberOfUnits, int price) {  
        this.itemNumber = itemNumber;  
        this.name = name;  
        this.numberOfUnits = numberOfUnits;  
        this.price = price;  
    }  
}
```

```
// Getter methods

public int getItemNumber() {

    return itemNumber;

}

public String getName() {

    return name;

}

public int getNumberOfUnits() {

    return numberOfUnits;

}

public int getPrice() {

    return price;

}

// toString method to print object details

@Override

public String toString() {

    return "Item Number: " + itemNumber + ", Name: " + name + ", Number of Units: " +
    numberOfUnits + ", Price: " + price;

}

// Main method to test the Inventory class

public static void main(String[] args) {

    Inventory item1 = new Inventory();

    Inventory item2 = new Inventory();

    Inventory item3 = new Inventory(2, "nani", 3, 5);

    Inventory item4 = new Inventory(3, "teja", 8, 0);

    Inventory item5 = new Inventory(1, "karthik", 7, 8);

}
```

```

        System.out.println(item1);

        System.out.println(item2);

        System.out.println(item3);

        System.out.println(item4);

        System.out.println(item5);

    }

}

```

Output:

```

java -cp /tmp/7BIiRQZagE/Inventory
Item Number: 0, Name: 0, Number of Units: 0, Price: 0
Item Number: 0, Name: 0, Number of Units: 0, Price: 0
Item Number: 2, Name: nani, Number of Units: 3, Price: 5
Item Number: 3, Name: teja, Number of Units: 8, Price: 0
Item Number: 1, Name: karthik, Number of Units: 7, Price: 8

=== Code Execution Successful ===

```

2.

```
import java.util.Scanner;
```

```
public class ProductTester {
```

```
    public static void main(String[] args) {
```

```
        Scanner in = new Scanner(System.in);
```

```
        int maxSize = getNumProducts(in); // Get the number of products
```

```
        Product[] products = new Product[maxSize]; // Array to hold products
```

```
        addToInventory(products, in); // Add products to the inventory
```

```
        int menuChoice;
```

```
        do {
```

```
            menuChoice = getMenuOption(in); // Display menu and get user's choice

```

```

        executeMenuChoice(menuChoice, products, in); // Execute the chosen menu option
    } while (menuChoice != 0); // Exit on choice 0

    in.close();
}

public static void displayInventory(Product[] products) {
    for (Product product : products) {
        if (product != null) {
            System.out.println(product);
        }
    }
}

public static void addToInventory(Product[] products, Scanner in) {
    for (int i = 0; i < products.length; i++) {
        System.out.println("Enter details for Product " + (i + 1) + " :");
        System.out.print("Item Number: ");
        int tempNumber = in.nextInt();
        in.nextLine(); // Clear the buffer
        System.out.print("Name: ");
        String tempName = in.nextLine();
        System.out.print("Quantity: ");
        int tempQty = in.nextInt();
        System.out.print("Price: ");
        double tempPrice = in.nextDouble();

        products[i] = new Product(tempNumber, tempName, tempQty, tempPrice);
    }
}

```

```
public static int getNumProducts(Scanner in) {  
    System.out.print("Enter the number of products: ");  
    return in.nextInt();  
}
```

```
public static int getMenuOption(Scanner in) {  
    int menuChoice = -1;  
    while (menuChoice < 0 || menuChoice > 4) {  
        System.out.println("\n1. View Inventory");  
        System.out.println("2. Add Stock");  
        System.out.println("3. Deduct Stock");  
        System.out.println("4. Discontinue Product");  
        System.out.println("0. Exit");  
        System.out.print("Please enter a menu option: ");  
  
        if (in.hasNextInt()) {  
            menuChoice = in.nextInt();  
        } else {  
            in.next(); // Clear the invalid input  
        }  
  
        if (menuChoice < 0 || menuChoice > 4) {  
            System.out.println("Invalid option. Please try again.");  
        }  
    }  
    return menuChoice;  
}
```

```
public static int getProductNumber(Product[] products, Scanner in) {  
    int productChoice = -1;
```

```

while (productChoice < 0 || productChoice >= products.length || products[productChoice] ==
null) {
    for (int i = 0; i < products.length; i++) {
        if (products[i] != null) {
            System.out.println(i + ": " + products[i].getName());
        }
    }
    System.out.print("Please select a product by its number: ");

    if (in.hasNextInt()) {
        productChoice = in.nextInt();
    } else {
        in.next(); // Clear invalid input
    }

    if (productChoice < 0 || productChoice >= products.length || products[productChoice] == null)
{
        System.out.println("Invalid product number. Please try again.");
    }
}
return productChoice;
}

```

```

public static void addInventory(Product[] products, Scanner in) {
    int productChoice = getProductNumber(products, in);
    System.out.print("How many products do you want to add? ");
    int updateValue = -1;

    while (updateValue < 0) {
        if (in.hasNextInt()) {
            updateValue = in.nextInt();
        } else {

```

```
        in.next(); // Clear invalid input
    }
```

```
    if (updateValue < 0) {
        System.out.println("Invalid value. Please enter a positive number.");
    }
}
```

```
products[productChoice].addToInventory(updateValue);
System.out.println("Updated stock for " + products[productChoice].getName());
}
```

```
public static void deductInventory(Product[] products, Scanner in) {
    int productChoice = getProductNumber(products, in);
    System.out.print("How many products do you want to deduct? ");
    int updateValue = -1;

    while (updateValue < 0 || updateValue > products[productChoice].getQuantity()) {
        if (in.hasNextInt()) {
            updateValue = in.nextInt();
        } else {
            in.next(); // Clear invalid input
        }

        if (updateValue < 0 || updateValue > products[productChoice].getQuantity()) {
            System.out.println("Invalid value. Please enter a number between 0 and " +
products[productChoice].getQuantity() + ".");
        }
    }

    products[productChoice].deductFromInventory(updateValue);
}
```

```
        System.out.println("Updated stock for " + products[productChoice].getName());  
    }  
}
```

```
public static void discontinueInventory(Product[] products, Scanner in) {  
    int productChoice = getProductNumber(products, in);  
    products[productChoice].setActive(false);  
    System.out.println(products[productChoice].getName() + " has been discontinued.");  
}
```

```
public static void executeMenuChoice(int menuChoice, Product[] products, Scanner in) {  
    switch (menuChoice) {  
        case 1:  
            System.out.println("View Product List");  
            displayInventory(products);  
            break;  
        case 2:  
            System.out.println("Add Stock");  
            addInventory(products, in);  
            break;  
        case 3:  
            System.out.println("Deduct Stock");  
            deductInventory(products, in);  
            break;  
        case 4:  
            System.out.println("Discontinue Stock");  
            discontinueInventory(products, in);  
            break;  
        case 0:  
            System.out.println("Exiting program.");  
            break;  
        default:
```



```
        System.out.println("Invalid choice. Please try again.");
    }
}
}
```

```
public class Product {
    // Fields, constructor, and methods from your previous code...

    // Method to add to inventory
    public void addToInventory(int quantity) {
        this.quantity += quantity;
    }

    // Method to deduct from inventory
    public void deductFromInventory(int quantity) {
        this.quantity -= quantity;
    }
}
```

Output:

```

Enter the number of products: 2
Enter details for Product 1:
Item Number: 3
Name: 😊
Quantity: 5
Price: 12000
Enter details for Product 2:
Item Number: 2
Name: 🍌
Quantity: 3
Price: 1200000

1. View Inventory
2. Add Stock
3. Deduct Stock
4. Discontinue Product
0. Exit
Please enter a menu option: 1
View Product List
Product [itemNumber=3, name=????, quantity=5, price=12000.0, isActive=true]
Product [itemNumber=2, name=????, quantity=3, price=1200000.0, isActive=true]

1. View Inventory
2. Add Stock
3. Deduct Stock
4. Discontinue Product
0. Exit
Please enter a menu option: 1

```

3.

```

import java.util.Scanner;

class Product{

    private int itemNumber;

    private String name;

    private int units;

    private double price;

    public Product(){

        this.itemNumber=0;

        this.name="0";

        this.units=0;

```

```

        this.price=0;
    }
    public Product(int itemNumber,String name,int units,double price){
        this.itemNumber=itemNumber;
        this.name=name;
        this.units=units;
        this.price=price;
    }
    public void setdata(int itemNumber,String name,int units,double price){
        this.itemNumber=itemNumber;
        this.name=name;
        this.units=units;
        this.price=price;
    }
    public int getnumber(){
        return itemNumber;
    }
    public String getname(){
        return name;
    }
    public int getunits(){
        return units;
    }
    public double getprice(){
        return price;
    }
    public String toString(){
        return "Item number : "+ itemNumber +"\\nName : "+name+"\\nno.of Units of the stock : "+units+"\\nprice of each unit : "+price;
    }

```

```
}
```

```
public class project1 {  
    public static void main(String[] args){  
        Scanner in =new Scanner(System.in);  
        int tempNumber;  
        String tempName;  
        int tempQty;  
        double tempPrice;  
        System.out.println("Enter item number for p1: ");  
        tempNumber = in.nextInt();  
        in.nextLine();  
        System.out.println("Enter name for p1: ");  
        tempName = in.nextLine();  
        System.out.println("Enter quantity for p1: ");  
        tempQty = in.nextInt();  
        System.out.println("Enter price for p1: ");  
        tempPrice = in.nextDouble();  
        Product product1=new Product(tempNumber,tempName,tempQty,tempPrice);  
        System.out.println("Enter item number for p2: ");  
        tempNumber = in.nextInt();  
        in.nextLine();  
        System.out.println("Enter name for p2: ");  
        tempName = in.nextLine();  
        System.out.println("Enter quantity for p2: ");  
        tempQty = in.nextInt();  
        System.out.println("Enter price for p2: ");  
        tempPrice = in.nextDouble();  
        Product product2=new Product(tempNumber,tempName,tempQty,tempPrice);  
        Product product3=new Product(1,"chair",10,1000.00);  
        Product product4=new Product(2,"desk",5,2000.00);  
        Product product5=new Product(1,"capboards",3,3000.00);  
    }  
}
```

```

        System.out.println(product1.toString());

        System.out.println(product2.toString());

        System.out.println(product3.toString());

        System.out.println(product4.toString());

        System.out.println(product5.toString());

        in.close();

    }

}

```

Output:

```

PS C:\Users\srika\Desktop\java> cd "c:\Users\srika\Desktop\java\" ; if ($?) { javac project1.java } ; if ($?) { java project1 }
Enter item number for p1:
1
Enter name for p1:
pen
Enter quantity for p1:
10
Enter price for p1:
10.00
Enter item number for p2:
2
Enter name for p2:
pencil
Enter quantity for p2:
10
Enter price for p2:
5.00
Item number : 1
Name : pen
no. of Units of the stock : 10
price of each unit : 10.0
Item number : 2
Name : pencil
no. of Units of the stock : 10
price of each unit : 5.0
Item number : 1
Name : chair
no. of Units of the stock : 10
price of each unit : 1000.0
Item number : 2
Name : desk
no. of Units of the stock : 10
price of each unit : 100.0

```

4.

```

import java.util.Scanner;

class Product{

    private int itemNumber;

    private String name;

    private int units;

    private double price;

    public Product(){

        this.itemNumber=0;

        this.name="0";

        this.units=0;

        this.price=0;
    }
}

```

```

    }

    public Product(int itemNumber,String name,int units,double price){

        this.itemNumber=itemNumber;

        this.name=name;

        this.units=units;

        this.price=price;
    }

    public void setdata(int itemNumber,String name,int units,double price){

        this.itemNumber=itemNumber;

        this.name=name;

        this.units=units;

        this.price=price;
    }

    public int getnumber(){

        return itemNumber;
    }

    public String getname(){

        return name;
    }

    public int getunits(){

        return units;
    }

    public double getprice(){

        return price;
    }

    double inventoryprice(){

        return price*units;
    }

    public String toString(){

        return "Item number : "+ itemNumber +"\\nName : "+name+"\\nno.of Units of the stock : "+units+"\\nprice of each unit : "+price+"\\n stock value : "+ inventoryprice();
    }

```

```

    }
}

public class project3 {

    public static void main(String[] args) {

        Scanner in=new Scanner(System.in);

        int maxSize=-1;

        do {

            try {

                System.out.println("Enter the number of products you would like to add");

                System.out.println("Enter 0 (zero) if you do not wish to add products");

                maxSize = in.nextInt();

                if (maxSize < 0) {

                    System.out.println("Incorrect value entered. Please enter a positive integer or zero.");

                }

            } catch (Exception e) {

                System.out.println("Incorrect data type entered!");

                in.nextLine();

            }

        } while (maxSize < 0);

        if (maxSize == 0) {

            System.out.println("No products required!");

        } else {

            Product[] products = new Product[maxSize];

            for (int i = 0; i < maxSize; i++) {

                in.nextLine();

                System.out.println("Enter item number for product " + (i + 1) + ": ");

                int tempNumber = in.nextInt();

                in.nextLine();

                System.out.println("Enter name for product " + (i + 1) + ": ");

                String tempName = in.nextLine();

                System.out.println("Enter quantity for product " + (i + 1) + ": ");
            }
        }
    }
}

```

```

        int tempQty = in.nextInt();

        System.out.println("Enter price for product " + (i + 1) + ": ");

        double tempPrice = in.nextDouble();

        products[i] = new Product(tempNumber, tempName, tempQty, tempPrice);
    }

    System.out.println("\nDisplaying Product Information:");

    for (Product product : products) {

        System.out.println(product.toString() + "\n");

    }

}

in.close();

}

```

Output:

```

PS C:\Users\srika\Desktop\java> cd "c:\Users\srika\Desktop\java\" ; if ($?) { javac project3.java } ; if ($?) { java project3 }
Enter the number of products you would like to add
Enter 0 (zero) if you do not wish to add products
1
Enter item number for product 1:
1
Enter name for product 1:
chair
Enter quantity for product 1:
4
Enter price for product 1:
1000.00

Displaying Product Information:
Item number : 1
Name : chair
no.of Units of the stock : 4
price of each unit : 1000.0
stock value : 4000.0

PS C:\Users\srika\Desktop\java>

```

5.

```
import java.util.Scanner;
```

```
public class ProductTester {
```

```

    public static void main(String[] args) {

        Scanner in = new Scanner(System.in);

        int maxSize = getNumProducts(in);

        Product[] products = new Product[maxSize];
    }
}

```



```

addToInventory(products, in);

int menuChoice;

do {
    menuChoice = getMenuOption(in);
    executeMenuChoice(menuChoice, products, in);
} while (menuChoice != 0);

in.close();
}

public static void displayInventory(Product[] products) {
    for (Product product : products) {
        if (product != null && product.isActive()) {
            System.out.println(product);
        }
    }
}

public static void addToInventory(Product[] products, Scanner in) {
    for (int i = 0; i < products.length; i++) {
        System.out.println("Enter details for Product " + (i + 1) + ":");
        System.out.print("Item Number: ");
        int tempNumber = in.nextInt();
        in.nextLine(); // Clear the buffer
        System.out.print("Name: ");
        String tempName = in.nextLine();
        System.out.print("Quantity: ");
        int tempQty = in.nextInt();
        System.out.print("Price: ");
        double tempPrice = in.nextDouble();
    }
}

```

```

        // Ensure valid inputs
        if (tempQty < 0) tempQty = 0;
        if (tempPrice < 0.0) tempPrice = 0.0;

        products[i] = new Product(tempNumber, tempName, tempQty, tempPrice);
    }
}

```

```

public static int getNumProducts(Scanner in) {
    System.out.print("Enter the number of products: ");
    while (!in.hasNextInt()) {
        in.next();
        System.out.print("Invalid input. Enter the number of products: ");
    }
    return in.nextInt();
}

```

```

public static int getMenuOption(Scanner in) {
    int menuChoice = -1;
    while (menuChoice < 0 || menuChoice > 4) {
        System.out.println("\n1. View Inventory");
        System.out.println("2. Add Stock");
        System.out.println("3. Deduct Stock");
        System.out.println("4. Discontinue Product");
        System.out.println("0. Exit");
        System.out.print("Please enter a menu option: ");

        if (in.hasNextInt()) {
            menuChoice = in.nextInt();
        } else {

```

```

        in.next(); // Clear the invalid input
    }

    if (menuChoice < 0 || menuChoice > 4) {
        System.out.println("Invalid option. Please try again.");
    }
}

return menuChoice;
}

public static int getProductNumber(Product[] products, Scanner in) {
    int productChoice = -1;

    while (productChoice < 0 || productChoice >= products.length || products[productChoice] ==
null || !products[productChoice].isActive()) {
        for (int i = 0; i < products.length; i++) {
            if (products[i] != null && products[i].isActive()) {
                System.out.println(i + ": " + products[i].getName());
            }
        }

        System.out.print("Please select a product by its number: ");

        if (in.hasNextInt()) {
            productChoice = in.nextInt();
        } else {
            in.next(); // Clear invalid input
        }

        if (productChoice < 0 || productChoice >= products.length || products[productChoice] == null
|| !products[productChoice].isActive()) {
            System.out.println("Invalid product number. Please try again.");
        }
    }
}

```

```
    return productChoice;
}
```

```
public static void addInventory(Product[] products, Scanner in) {
    int productChoice = getProductNumber(products, in);
    System.out.print("How many products do you want to add? ");
    int updateValue = -1;

    while (updateValue < 0) {
        if (in.hasNextInt()) {
            updateValue = in.nextInt();
        } else {
            in.next(); // Clear invalid input
        }

        if (updateValue < 0) {
            System.out.println("Invalid value. Please enter a positive number.");
        }
    }
}
```

```
    products[productChoice].addToInventory(updateValue);
    System.out.println("Updated stock for " + products[productChoice].getName());
}
```

```
public static void deductInventory(Product[] products, Scanner in) {
    int productChoice = getProductNumber(products, in);
    System.out.print("How many products do you want to deduct? ");
    int updateValue = -1;

    while (updateValue < 0 || updateValue > products[productChoice].getQuantity()) {
        if (in.hasNextInt()) {
```

```

        updateValue = in.nextInt();
    } else {
        in.next(); // Clear invalid input
    }

    if (updateValue < 0 || updateValue > products[productChoice].getQuantity()) {
        System.out.println("Invalid value. Please enter a number between 0 and " +
products[productChoice].getQuantity() + ".");
    }
}

products[productChoice].deductFromInventory(updateValue);
System.out.println("Updated stock for " + products[productChoice].getName());
}

public static void discontinueInventory(Product[] products, Scanner in) {
    int productChoice = getProductNumber(products, in);
    products[productChoice].setActive(false);
    System.out.println(products[productChoice].getName() + " has been discontinued.");
}

public static void executeMenuChoice(int menuChoice, Product[] products, Scanner in) {
    switch (menuChoice) {
        case 1:
            System.out.println("View Product List");
            displayInventory(products);
            break;
        case 2:
            System.out.println("Add Stock");
            addInventory(products, in);
            break;
    }
}

```

```

        case 3:
            System.out.println("Deduct Stock");
            deductInventory(products, in);
            break;
        case 4:
            System.out.println("Discontinue Stock");
            discontinueInventory(products, in);
            break;
        case 0:
            System.out.println("Exiting program.");
            break;
        default:
            System.out.println("Invalid choice. Please try again.");
    }
}
}

```

```

class Product {
    private int itemNumber;
    private String name;
    private int quantity;
    private double price;
    private boolean active;

    public Product(int itemNumber, String name, int quantity, double price) {
        this.itemNumber = itemNumber;
        this.name = name;
        this.quantity = quantity;
        this.price = price;
        this.active = true;
    }
}

```

```
public void addToInventory(int quantity) {
    this.quantity += quantity;
}

public void deductFromInventory(int quantity) {
    this.quantity -= quantity;
}

public void setActive(boolean active) {
    this.active = active;
}

public boolean isActive() {
    return active;
}

public int getQuantity() {
    return quantity;
}

public String getName() {
    return name;
}

@Override
public String toString() {
    return "Product [Item Number=" + itemNumber + ", Name=" + name + ", Quantity=" + quantity +
", Price=" + price + "]\n";
}
}
```

Output:

```
Enter the number of products: 2
Enter details for Product 1:
Item Number: 4
Name: karthik
Quantity: 300
Price: 2600
Enter details for Product 2:
Item Number: 5
Name: nani
Quantity: 280
Price: 340

1. View Inventory
2. Add Stock
3. Deduct Stock
4. Discontinue Product
0. Exit
Please enter a menu option: 2
Add Stock
0: karthik
1: nani
Please select a product by its number: 4
Invalid product number. Please try again.
0: karthik
1: nani
Please select a product by its number: 5
Invalid product number. Please try again.
```

6.

```
import java.util.Scanner;
```



```
// Player class
class Player {
    private String name;
    private char symbol;

    public Player(String name, char symbol) {
        this.name = name;
        this.symbol = symbol;
    }

    public String getName() {
        return name;
    }

    public char getSymbol() {
        return symbol;
    }
}

// TicTacToe class
public class TicTacToe {
    private char[][] board;
    private Player player1;
    private Player player2;
    private Player currentPlayer;

    public TicTacToe(Player player1, Player player2) {
        board = new char[3][3];
        this.player1 = player1;
        this.player2 = player2;
    }
}
```

```
    this.currentPlayer = player1;

    initializeBoard();
}
```

```
private void initializeBoard() {
    for (int i = 0; i < 3; i++) {
        for (int j = 0; j < 3; j++) {
            board[i][j] = '-';
        }
    }
}
```

```
public void printBoard() {
    System.out.println("Current board:");
    for (int i = 0; i < 3; i++) {
        for (int j = 0; j < 3; j++) {
            System.out.print(board[i][j] + " ");
        }
        System.out.println();
    }
}
```

```
public boolean makeMove(int row, int col) {
    if (row < 0 || col < 0 || row >= 3 || col >= 3 || board[row][col] != '-') {
        System.out.println("This move is not valid. Try again.");
        return false;
    }

    board[row][col] = currentPlayer.getSymbol();

    return true;
}
```

```

public boolean checkWinner() {

    // Check rows and columns

    for (int i = 0; i < 3; i++) {

        if ((board[i][0] == currentPlayer.getSymbol() && board[i][1] == currentPlayer.getSymbol() &&
board[i][2] == currentPlayer.getSymbol()) ||

            (board[0][i] == currentPlayer.getSymbol() && board[1][i] == currentPlayer.getSymbol() &&
board[2][i] == currentPlayer.getSymbol())) {

            return true;

        }

    }

    // Check diagonals

    if ((board[0][0] == currentPlayer.getSymbol() && board[1][1] == currentPlayer.getSymbol() &&
board[2][2] == currentPlayer.getSymbol()) ||

        (board[0][2] == currentPlayer.getSymbol() && board[1][1] == currentPlayer.getSymbol() &&
board[2][0] == currentPlayer.getSymbol())) {

        return true;

    }

    return false;

}

```

```

public boolean isBoardFull() {

    for (int i = 0; i < 3; i++) {

        for (int j = 0; j < 3; j++) {

            if (board[i][j] == '-') {

                return false;

            }

        }

    }

    return true;

}

```

```

public void switchPlayer() {

```

```
        currentPlayer = (currentPlayer == player1) ? player2 : player1;
    }
}
```

```
public Player getCurrentPlayer() {
    return currentPlayer;
}
```

```
public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
```

```
    // Get player names
```

```
    System.out.print("Enter name for Player 1 (X): ");
```

```
    Player player1 = new Player(scanner.nextLine(), 'X');
```

```
    System.out.print("Enter name for Player 2 (O): ");
```

```
    Player player2 = new Player(scanner.nextLine(), 'O');
```

```
    // Initialize the game
```

```
    TicTacToe game = new TicTacToe(player1, player2);
```

```
    // Main game loop
```

```
    while (true) {
```

```
        game.printBoard();
```

```
        System.out.println(game.getCurrentPlayer().getName() + "'s turn. Enter row and column (0, 1, or 2): ");
```

```
    // Validate input
```

```
    int row = -1, col = -1;
```

```
    while (true) {
```

```
        try {
```

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

```

        row = scanner.nextInt();

        System.out.print("Enter column: ");

        col = scanner.nextInt();

        if (row >= 0 && row < 3 && col >= 0 && col < 3) break;

        else System.out.println("Invalid input! Please enter numbers between 0 and 2.");

    } catch (Exception e) {

        System.out.println("Invalid input! Please enter numbers between 0 and 2.");

        scanner.nextLine(); // Clear the buffer

    }

}

if (game.makeMove(row, col)) {

    if (game.checkWinner()) {

        game.printBoard();

        System.out.println(game.getCurrentPlayer().getName() + " wins!");

        break;

    } else if (game.isBoardFull()) {

        game.printBoard();

        System.out.println("The game is a tie!");

        break;

    } else {

        game.switchPlayer();

    }

}

}

scanner.close();

}

}

```

Output:

```
Enter name for Player 1 (X): nani
Enter name for Player 2 (O): teja
Current board:
- - -
- - -
- - -

nani's turn. Enter row and column (0, 1, or 2):
Enter row: 1
Enter column: 3
Invalid input! Please enter numbers between 0 and 2.
Enter row: 1
Enter column: 2
Current board:
- - -
- - X
- - -

teja's turn. Enter row and column (0, 1, or 2):
Enter row: 0
Enter column: 1
Current board:
- 0 -
- - X
- - -

nani's turn. Enter row and column (0, 1, or 2):
Enter row: 1
Enter column: 2
This move is not valid. Try again.
Current board:
- - -
```