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IT Software Design and Software

JD521

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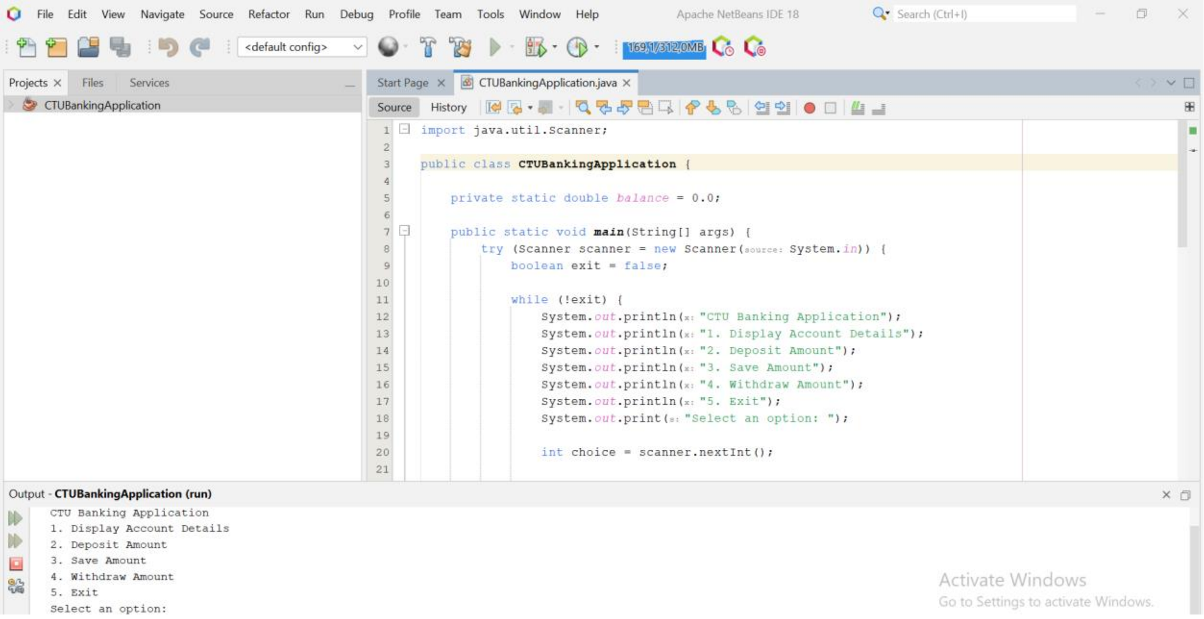
Question 1: CTU Banking Application

1.1 Create a basic Java Application that will help CTU banking clients to perform basic transactions. The Application

should meet the following menu requirements:

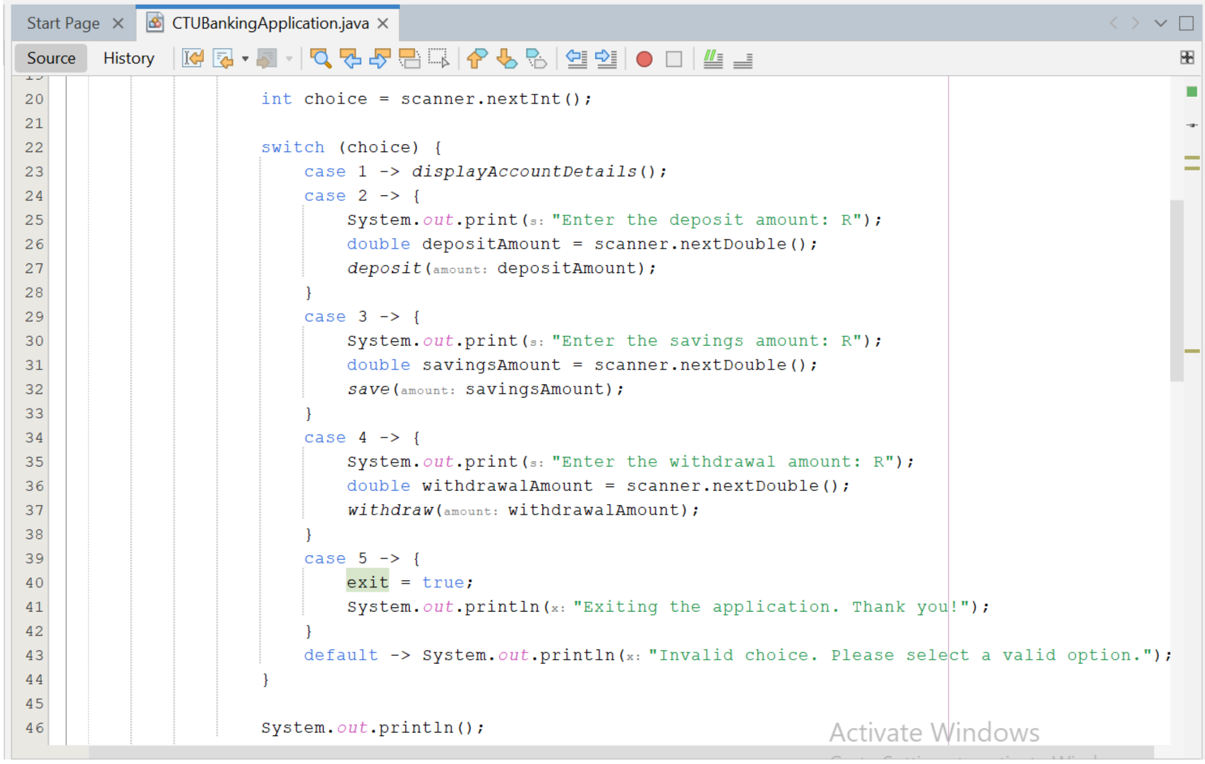
- Display all account details
- Deposit the amount
- Save the amount
- Withdraw the amount
- Exit

Answer:

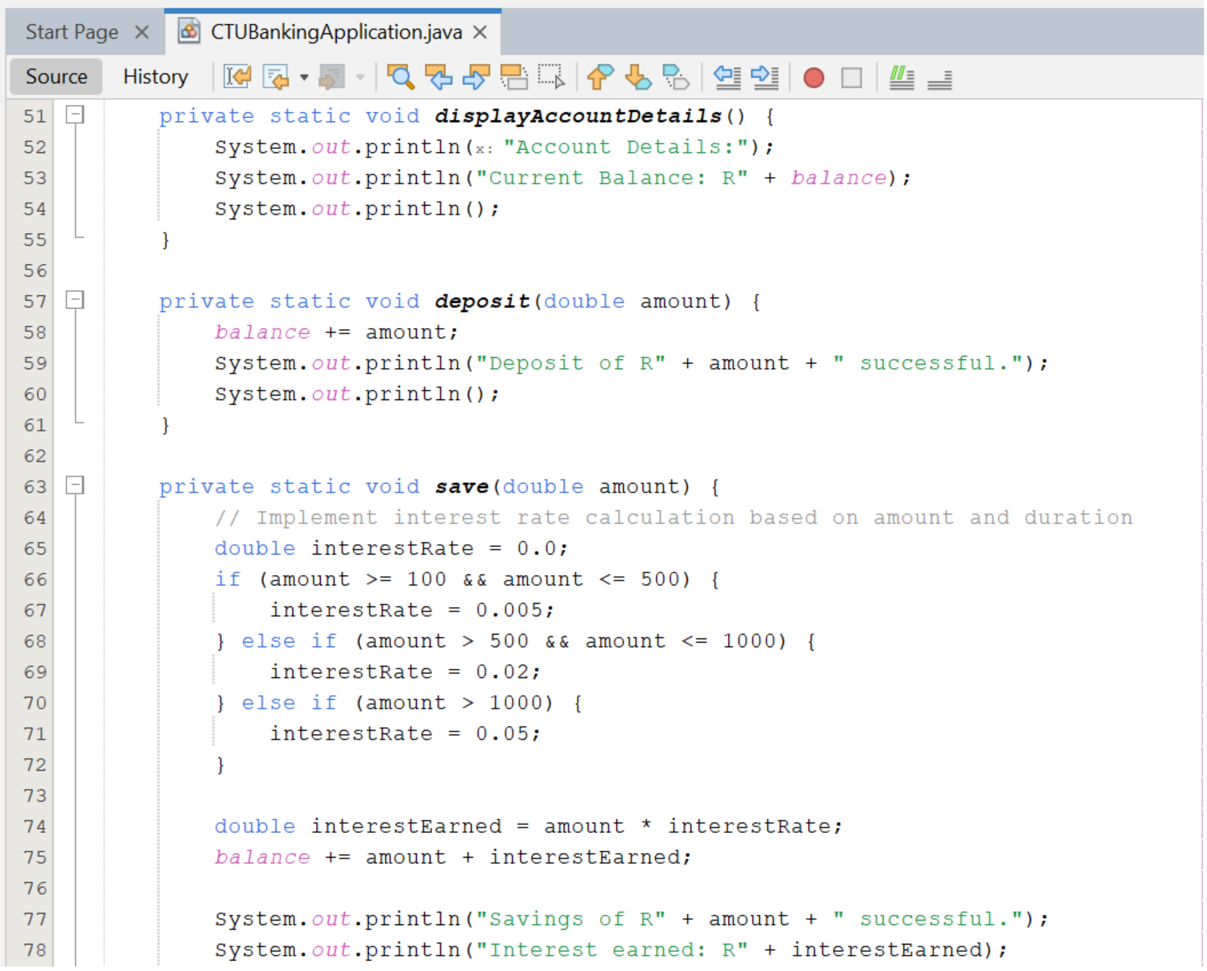


```java
import java.util.Scanner;

public class CTUBankingApplication {

    private static double balance = 0.0;

    public static void main(String[] args) {
        try (Scanner scanner = new Scanner(System.in)) {
            boolean exit = false;

            while (!exit) {
                System.out.println("CTU Banking Application");
                System.out.println("1. Display Account Details");
                System.out.println("2. Deposit Amount");
                System.out.println("3. Save Amount");
                System.out.println("4. Withdraw Amount");
                System.out.println("5. Exit");
                System.out.print("Select an option: ");

                int choice = scanner.nextInt();

```

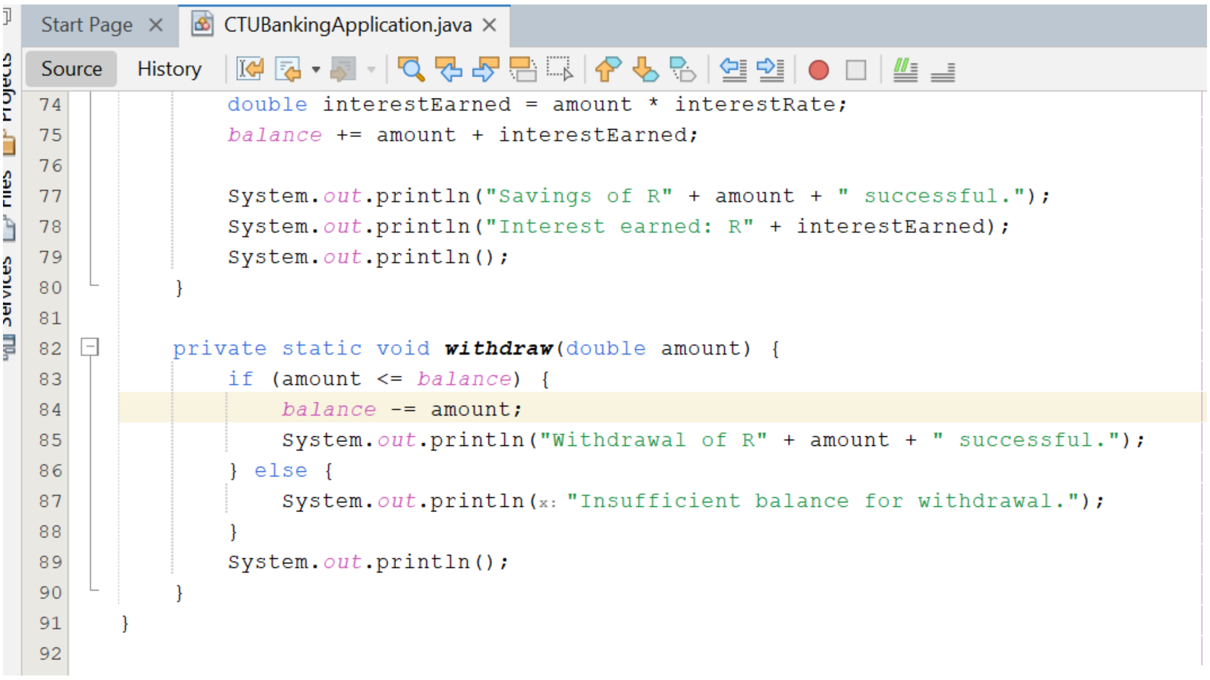
```
CTU Banking Application
1. Display Account Details
2. Deposit Amount
3. Save Amount
4. Withdraw Amount
5. Exit
Select an option:
```



```java
            int choice = scanner.nextInt();

            switch (choice) {
                case 1 -> displayAccountDetails();
                case 2 -> {
                    System.out.print(s: "Enter the deposit amount: R");
                    double depositAmount = scanner.nextDouble();
                    deposit(amount: depositAmount);
                }
                case 3 -> {
                    System.out.print(s: "Enter the savings amount: R");
                    double savingsAmount = scanner.nextDouble();
                    save(amount: savingsAmount);
                }
                case 4 -> {
                    System.out.print(s: "Enter the withdrawal amount: R");
                    double withdrawalAmount = scanner.nextDouble();
                    withdraw(amount: withdrawalAmount);
                }
                case 5 -> {
                    exit = true;
                    System.out.println(x: "Exiting the application. Thank you!");
                }
                default -> System.out.println(x: "Invalid choice. Please select a valid option.");
            }

            System.out.println();
```

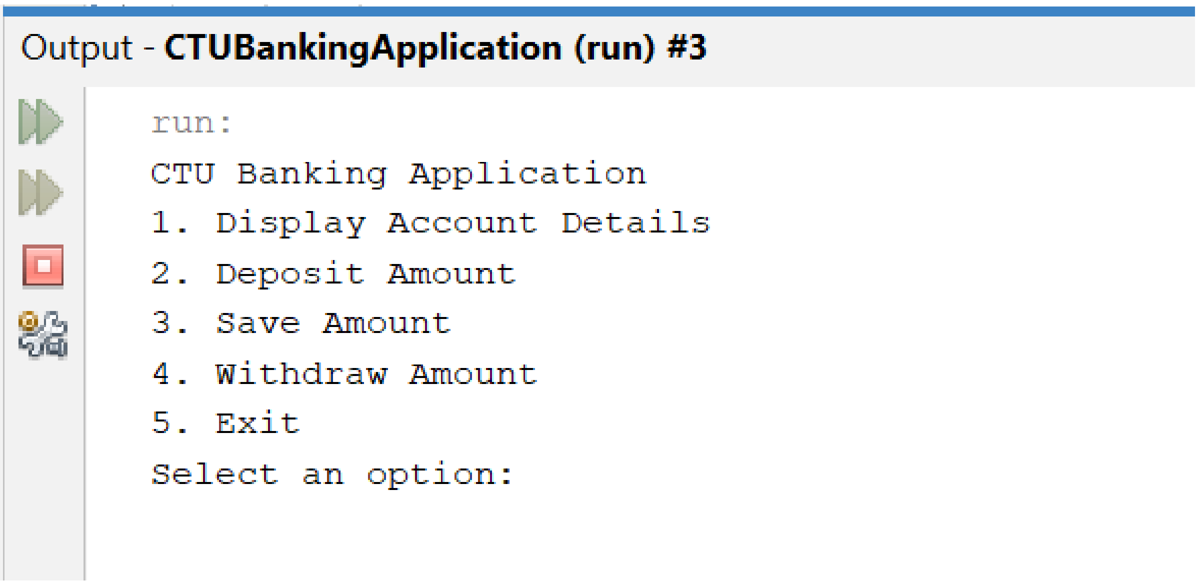


```java
    private static void displayAccountDetails() {
        System.out.println(x: "Account Details:");
        System.out.println("Current Balance: R" + balance);
        System.out.println();
    }

    private static void deposit(double amount) {
        balance += amount;
        System.out.println("Deposit of R" + amount + " successful.");
        System.out.println();
    }

    private static void save(double amount) {
        // Implement interest rate calculation based on amount and duration
        double interestRate = 0.0;
        if (amount >= 100 && amount <= 500) {
            interestRate = 0.005;
        } else if (amount > 500 && amount <= 1000) {
            interestRate = 0.02;
        } else if (amount > 1000) {
            interestRate = 0.05;
        }

        double interestEarned = amount * interestRate;
        balance += amount + interestEarned;

        System.out.println("Savings of R" + amount + " successful.");
        System.out.println("Interest earned: R" + interestEarned);
```

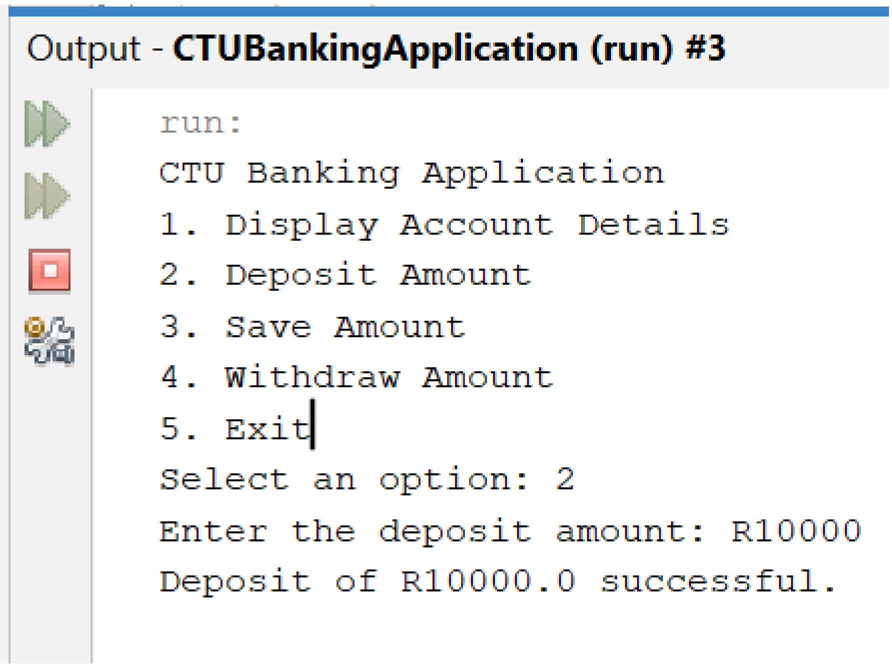


```
        double interestEarned = amount * interestRate;
        balance += amount + interestEarned;

        System.out.println("Savings of R" + amount + " successful.");
        System.out.println("Interest earned: R" + interestEarned);
        System.out.println();
    }

    private static void withdraw(double amount) {
        if (amount <= balance) {
            balance -= amount;
            System.out.println("Withdrawal of R" + amount + " successful.");
        } else {
            System.out.println(x: "Insufficient balance for withdrawal.");
        }
        System.out.println();
    }
}
```

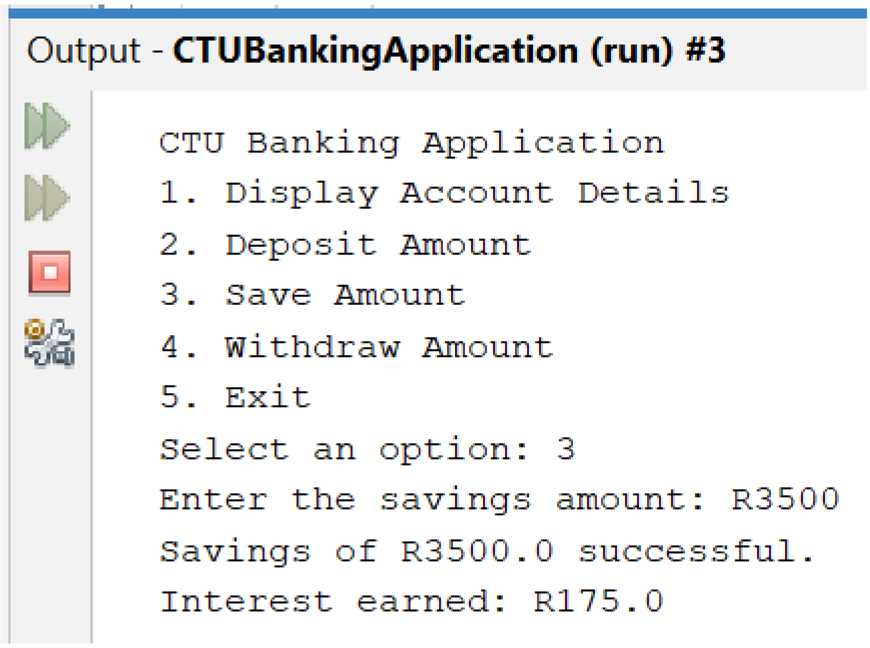
OutPut:


Output - **CTUBankingApplication (run) #3**

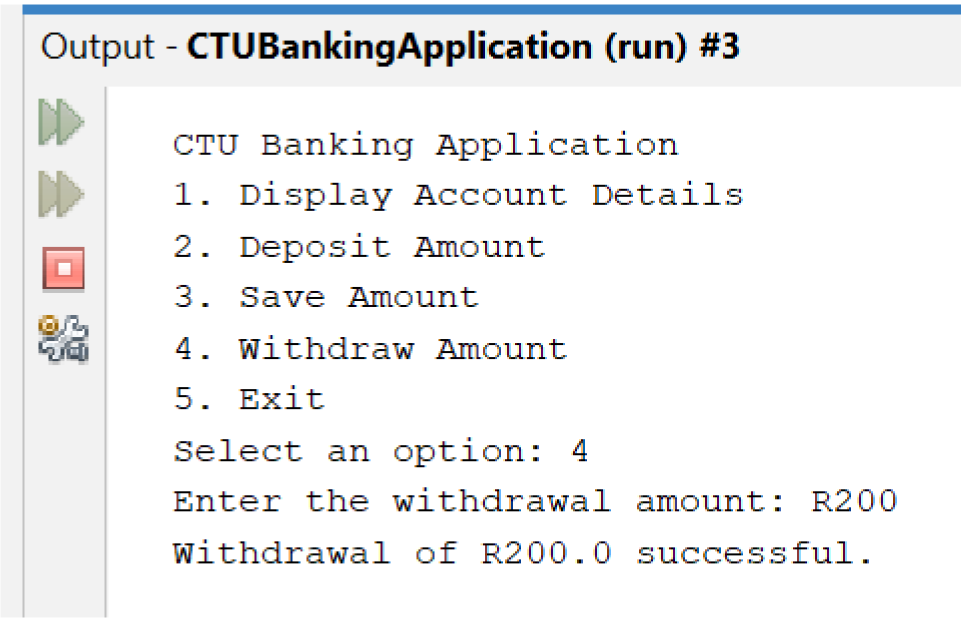
```
run:
CTU Banking Application
1. Display Account Details
2. Deposit Amount
3. Save Amount
4. Withdraw Amount
5. Exit
Select an option:
```



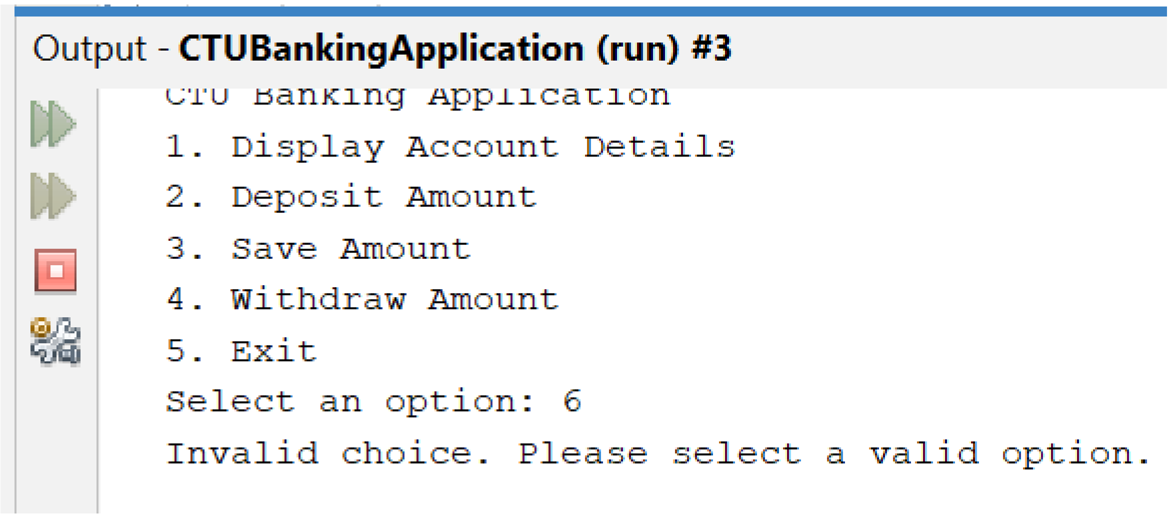
```
run:
CTU Banking Application
1. Display Account Details
2. Deposit Amount
3. Save Amount
4. Withdraw Amount
5. Exit
Select an option: 2
Enter the deposit amount: R10000
Deposit of R10000.0 successful.
```



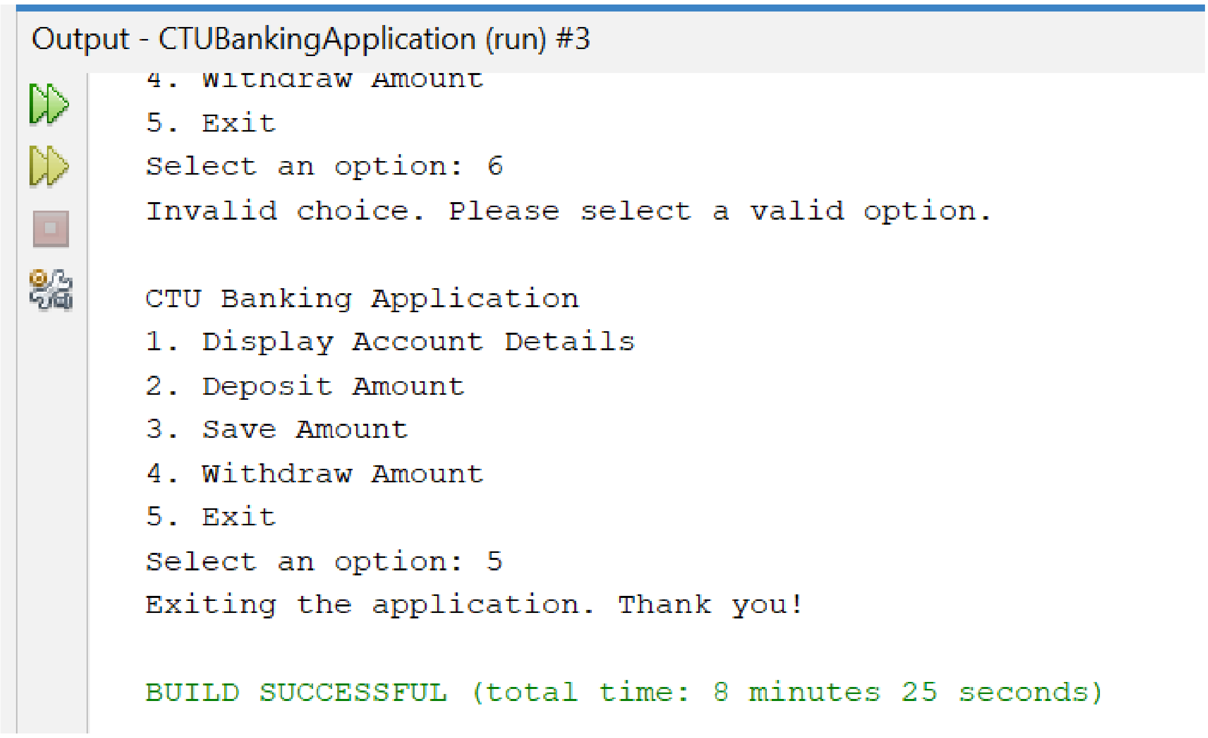
```
CTU Banking Application
1. Display Account Details
2. Deposit Amount
3. Save Amount
4. Withdraw Amount
5. Exit
Select an option: 3
Enter the savings amount: R3500
Savings of R3500.0 successful.
Interest earned: R175.0
```



```
CTU Banking Application
1. Display Account Details
2. Deposit Amount
3. Save Amount
4. Withdraw Amount
5. Exit
Select an option: 4
Enter the withdrawal amount: R200
Withdrawal of R200.0 successful.
```



```
CTU Banking Application
1. Display Account Details
2. Deposit Amount
3. Save Amount
4. Withdraw Amount
5. Exit
Select an option: 6
Invalid choice. Please select a valid option.
```



```
4. Withdraw Amount
5. Exit
Select an option: 6
Invalid choice. Please select a valid option.

CTU Banking Application
1. Display Account Details
2. Deposit Amount
3. Save Amount
4. Withdraw Amount
5. Exit
Select an option: 5
Exiting the application. Thank you!

BUILD SUCCESSFUL (total time: 8 minutes 25 seconds)
```