BASIC LEVEL PROJECT

Project Title: Daily Habit Tracker (Console Application)

Description:

- Collect daily habits from user input
- Store habits in a list
- Display completed and pending tasks
- Calculate weekly habit score

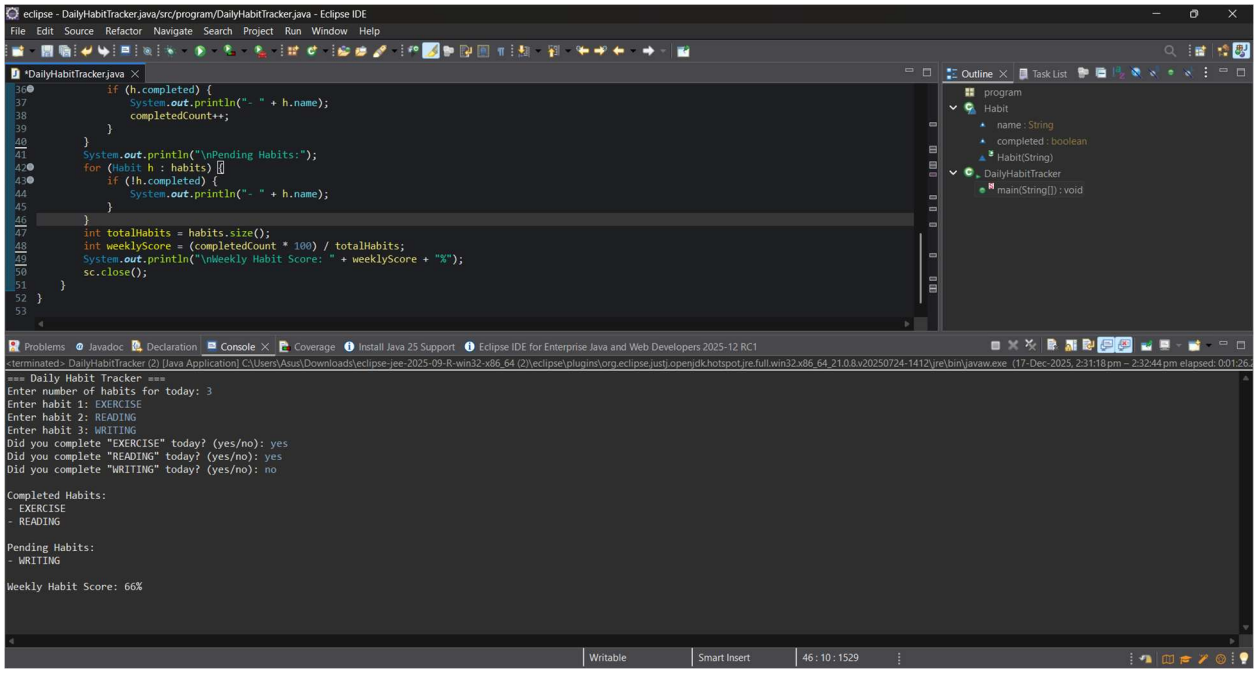
JAVA PROGRAM:

```
package program;

import java.util.ArrayList;

import java.util.Scanner;

class Habit {

    String name;

    boolean completed;

    Habit(String name) {

        this.name = name;

        this.completed = false;

    }

}

public class DailyHabitTracker {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        ArrayList<Habit> habits = new ArrayList<>();

        System.out.println("=== Daily Habit Tracker ===");

        System.out.print("Enter number of habits for today: ");

        int n = sc.nextInt();

        sc.nextLine();

        for (int i = 1; i <= n; i++) {

            System.out.print("Enter habit " + i + ": ");

            String habitName = sc.nextLine();
```

```
    habits.add(new Habit(habitName));
}
for (Habit h : habits) {
    System.out.print("Did you complete \"" + h.name + "\" today? (yes/no): ");
    String status = sc.nextLine();
    if (status.equalsIgnoreCase("yes")) {
        h.completed = true;
    }
}
System.out.println("\nCompleted Habits:");
int completedCount = 0;
for (Habit h : habits) {
    if (h.completed) {
        System.out.println("- " + h.name);
        completedCount++;
    }
}
System.out.println("\nPending Habits:");
for (Habit h : habits) {
    if (!h.completed) {
        System.out.println("- " + h.name);
    }
}
```

```
        int totalHabits = habits.size();
        int weeklyScore = (completedCount * 100) / totalHabits;
        System.out.println("\nWeekly Habit Score: " + weeklyScore + "%");
        sc.close();
    }
}
```

OUTPUT:



MEDIUM LEVEL PROJECT

Project Title: Expense Splitter (Mini Splitwise Console App)

Requirements:

- Add users and expenses
- Auto-split amount
- Show payment summary
- Use OOP + Collections

JAVA PROGRAM:

```
package project;
import java.util.ArrayList;
import java.util.HashMap;
import java.util.Scanner;
                class User {
                    int id;
                    String name;
                    User(int id, String name) {
                        this.id = id;
                        this.name = name;
                    }
                }
                class Expense {
                    User paidBy;
                    double amount;
                    ArrayList<User> participants;
                    Expense(User paidBy, double amount, ArrayList<User> participants) {
                        this.paidBy = paidBy;
                        this.amount = amount;
                        this.participants = participants;
                    }
                }
                public class ExpenseSplitter {
                    static ArrayList<User> users = new ArrayList<>();
                    static ArrayList<Expense> expenses = new ArrayList<>();
                    static HashMap<String, Double> balanceSheet = new HashMap<>();
```

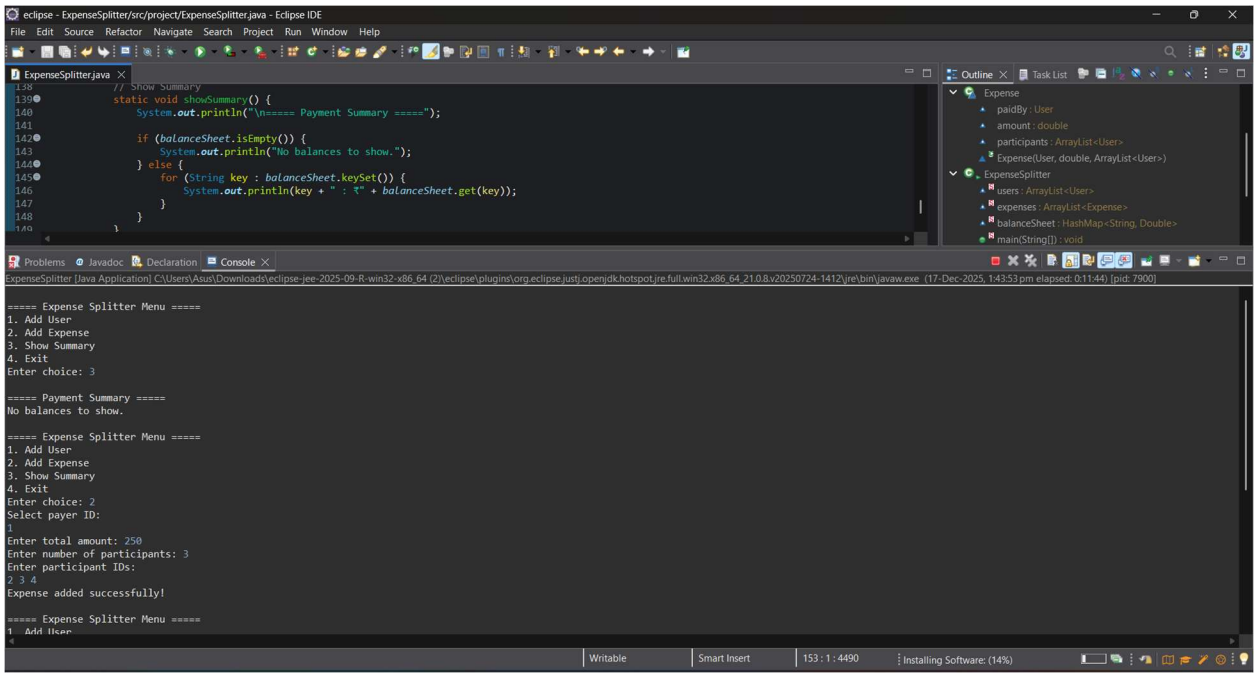
```
public static void main(String[] args) {
    Scanner sc = new Scanner(System.in);
    int choice;
    do {
        System.out.println("\n===== Expense Splitter Menu =====");
        System.out.println("1. Add User");
        System.out.println("2. Add Expense");
        System.out.println("3. Show Summary");
        System.out.println("4. Exit");
        System.out.print("Enter choice: ");
        choice = sc.nextInt();
        switch (choice) {
            case 1:
                addUser(sc);
                break;
            case 2:
                addExpense(sc);
                break;
            case 3:
                showSummary();
                break;
            case 4:
                System.out.println("Thank you for using Expense Splitter!");
                break;
            default:
                System.out.println("Invalid choice!");
        }
```

```
    } while (choice != 4);
    sc.close();
}
static void addUser(Scanner sc) {
    System.out.print("Enter User ID: ");
    int id = sc.nextInt();
    System.out.print("Enter User Name: ");
    String name = sc.next();
    users.add(new User(id, name));
    System.out.println("User added successfully!");
}
static void addExpense(Scanner sc) {
    System.out.println("Select payer ID:");
    for (User u : users) {
        System.out.println(u.id + " - " + u.name);
    }
    int payerId = sc.nextInt();
    User payer = null;
    for (User u : users) {
        if (u.id == payerId) {
            payer = u;
            break;
        }
    }
    System.out.print("Enter total amount: ");
    double amount = sc.nextDouble();
```

```
            System.out.print("Enter number of participants: ");
            int count = sc.nextInt();
            ArrayList<User> participants = new ArrayList<>();
            System.out.println("Enter participant IDs:");
            for (int i = 0; i < count; i++) {
                int pid = sc.nextInt();
                for (User u : users) {
                    if (u.id == pid) {
                        participants.add(u);
                    }
                }
            }
            Expense expense = new Expense(payer, amount, participants);
            expenses.add(expense);
            splitExpense(expense);
            System.out.println("Expense added successfully!");
        }
        static void splitExpense(Expense expense) {
            double splitAmount = expense.amount / expense.participants.size();
            for (User user : expense.participants) {
                if (!user.name.equals(expense.paidBy.name)) {
                    String key = user.name + " owes " + expense.paidBy.name;
                    balanceSheet.put(key, balanceSheet.getOrDefault(key, 0.0) +
splitAmount);
                }
            }
        }
```

```
    static void showSummary() {
        System.out.println("\n===== Payment Summary =====");

        if (balanceSheet.isEmpty()) {
            System.out.println("No balances to show.");
        } else {
            for (String key : balanceSheet.keySet()) {
                System.out.println(key + " : ₹" + balanceSheet.get(key));
            }
        }
    }
}
```

OUTPUT:



ADVANCED LEVEL PROJECT

Project Title: Smart Parking Lot System

Requirements:

- Add/Remove vehicles
- Generate parking tickets
- Calculate charges
- File handling + Custom exceptions

JAVA PROGRAM:

```
package program;
import java.io.*;
import java.time.*;
import java.util.*;
class ParkingFullException extends Exception {
 public ParkingFullException(String message) {
    super(message);
 }
}
class Vehicle implements Serializable {
 private String vehicleNumber;
 private String vehicleType;
 public Vehicle(String vehicleNumber, String vehicleType) {
    this.vehicleNumber = vehicleNumber;
    this.vehicleType = vehicleType;
 }
 public String getVehicleNumber() {
    return vehicleNumber;
 }
 public String getVehicleType() {
    return vehicleType;
 }
}
class ParkingTicket implements Serializable {
 private Vehicle vehicle;
 private LocalDateTime entryTime;
```

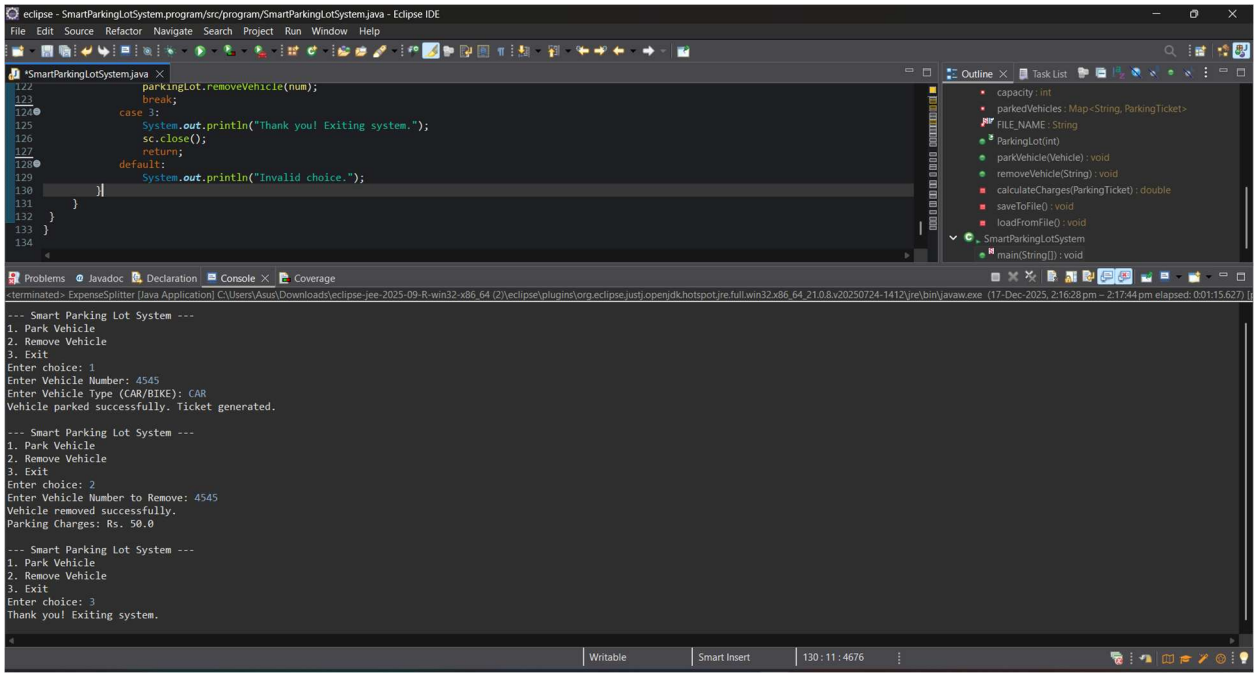
```
 public ParkingTicket(Vehicle vehicle) {
    this.vehicle = vehicle;
    this.entryTime = LocalDateTime.now();
 }
 public Vehicle getVehicle() {
    return vehicle;
 }
 public LocalDateTime getEntryTime() {
    return entryTime;
 }
}
class ParkingLot {
 private int capacity;
 private Map<String, ParkingTicket> parkedVehicles;
 private static final String FILE_NAME = "parking_data.dat";
 public ParkingLot(int capacity) {
    this.capacity = capacity;
    parkedVehicles = new HashMap<>();
    loadFromFile();
 }
 public void parkVehicle(Vehicle vehicle) throws ParkingFullException {
    if (parkedVehicles.size() >= capacity) {
       throw new ParkingFullException("Parking lot is full!");
    }
    ParkingTicket ticket = new ParkingTicket(vehicle);
    parkedVehicles.put(vehicle.getVehicleNumber(), ticket);
    saveToFile();
```

```
        System.out.println("Vehicle parked successfully. Ticket generated.");
    }
    public void removeVehicle(String vehicleNumber) {
        ParkingTicket ticket = parkedVehicles.remove(vehicleNumber);
        if (ticket == null) {
            System.out.println("Vehicle not found.");
            return;
        }
        double charges = calculateCharges(ticket);
        saveToFile();
        System.out.println("Vehicle removed successfully.");
        System.out.println("Parking Charges: Rs. " + charges);
    }
    private double calculateCharges(ParkingTicket ticket) {
        long hours = Duration.between(ticket.getEntryTime(), LocalDateTime.now()).toHours();
        if (hours == 0) hours = 1;
        if (ticket.getVehicle().getVehicleType().equalsIgnoreCase("CAR")) {
            return hours * 50; // Rs.50 per hour
        } else {
            return hours * 20; // Rs.20 per hour
        }
    }
    private void saveToFile() {
        try (ObjectOutputStream oos = new ObjectOutputStream(new
FileOutputStream(FILE_NAME))) {
            oos.writeObject(parkedVehicles);
        } catch (IOException e) {
```

```
            System.out.println("Error saving data.");
        }
    }
    @SuppressWarnings("unchecked")
    private void loadFromFile() {
        File file = new File(FILE_NAME);
        if (!file.exists()) return;
        try (ObjectInputStream ois = new ObjectInputStream(new FileInputStream(FILE_NAME)))
{
            parkedVehicles = (HashMap<String, ParkingTicket>) ois.readObject();
        } catch (Exception e) {
            System.out.println("Error loading data.");
        }
    }
}
public class SmartParkingLotSystem {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        ParkingLot parkingLot = new ParkingLot(5);
        while (true) {
            System.out.println("\n--- Smart Parking Lot System ---");
            System.out.println("1. Park Vehicle");
            System.out.println("2. Remove Vehicle");
            System.out.println("3. Exit");
            System.out.print("Enter choice: ");
            int choice = sc.nextInt();
            sc.nextLine();
```

```
        switch (choice) {
            case 1:
                try {
                    System.out.print("Enter Vehicle Number: ");
                    String number = sc.nextLine();
                    System.out.print("Enter Vehicle Type (CAR/BIKE): ");
                    String type = sc.nextLine();
                    Vehicle vehicle = new Vehicle(number, type);
                    parkingLot.parkVehicle(vehicle);
                } catch (ParkingFullException e) {
                    System.out.println(e.getMessage());
                }
                break;
            case 2:
                System.out.print("Enter Vehicle Number to Remove: ");
                String num = sc.nextLine();
                parkingLot.removeVehicle(num);
                break;
            case 3:
                System.out.println("Thank you! Exiting system.");
                sc.close();
                return;
            default:
                System.out.println("Invalid choice.");
        }
    }
}}
```

OUTPUT:


eclipse - SmartParkingLotSystem.program/src/program/SmartParkingLotSystem.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
*SmartParkingLotSystem.java
parkingLot.removeVehicle(num);
break;
case 3:
System.out.println("Thank you! Exiting system.");
sc.close();
return;
default:
System.out.println("Invalid choice.");
}
}
}
}
Outline
Task List
capacity : int
parkedVehicles : Map<String, ParkingTicket>
FILE_NAME : String
ParkingLot(int)
parkVehicle(Vehicle) : void
removeVehicle(String) : void
calculateCharges(ParkingTicket) : double
saveToFile() : void
loadFromFile() : void
SmartParkingLotSystem
main(String[]) : void
Problems
Javadoc
Declaration
Console
Coverage
<terminated> ExpenseSplitter [Java Application] C:\Users\Asus\Downloads\eclipse-jee-2025-09-R-win32-x86_64 (2)\eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_21.0.8.v20250724-1412\jre\bin\javaw.exe (17-Dec-2025, 2:16:28 pm – 2:17:44 pm elapsed: 0:01:15.627)
--- Smart Parking Lot System ---
1. Park Vehicle
2. Remove Vehicle
3. Exit
Enter choice: 1
Enter Vehicle Number: 4545
Enter Vehicle Type (CAR/BIKE): CAR
Vehicle parked successfully. Ticket generated.
--- Smart Parking Lot System ---
1. Park Vehicle
2. Remove Vehicle
3. Exit
Enter choice: 2
Enter Vehicle Number to Remove: 4545
Vehicle removed successfully.
Parking Charges: Rs. 50.0
--- Smart Parking Lot System ---
1. Park Vehicle
2. Remove Vehicle
3. Exit
Enter choice: 3
Thank you! Exiting system.
Writable
Smart Insert
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