



Introduction to Software Engineering Assignment 1



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20231189

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Java Programs



Aly El-Deen Yasser Aly:

- Hours of Study: 18 hours
- Source of study

https://youtube.com/playlist?list=PLCInYL3l2AajYlZGzU_LVrHdoouf8W6ZN&si=tfRlF2iNxOtJehum

- Video Link: <https://youtu.be/-brwmS8jSZo>



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Project
├── Assignment 1
│   ├── out
│   └── src
│       ├── Board
│       │   └── Board
│       ├── Tasks
│       ├── Workers
│       │   ├── Manger
│       │   ├── Normal
│       │   │   ├── Junior
│       │   │   ├── Senior
│       │   │   └── Normal
│       │   └── Worker
│       └── Main
├── .gitignore
├── Assignment 1.iml
├── External Libraries
└── Scratches and Consoles

Main.java
public class Main {
    public static void main(String[] args) {
        // Initialize manager list and add a default manager
        ArrayList<Manger> managers = new ArrayList<>();
        managers.add(new Manger("Aly", salary 20000, FieldType "General", Username "Aly", Password "11114"));

        // Initialize lists for Juniors and Seniors
        ArrayList<Junior> juniors = new ArrayList<>();
        ArrayList<Senior> seniors = new ArrayList<>();

        // Create the board with the existing worker lists
        Board board = new Board(juniors, managers, seniors);

        // Main menu loop for user interaction
        while (true) {
            int menuChoice = Normal.getValidChoice(
                new String[]{"Manager", "Senior", "Junior", "Exit"},
                "Menu: a ==== Welcome to Workers Management System ==== a"
            );

            // Navigate based on user choice
            if (menuChoice == 0)
                board.manage();
            else if (menuChoice == 1)
                board.seniorWork();
            else if (menuChoice == 2)
                board.juniorWork();
            else if (menuChoice == 3)
                break;
        }
    }
}
```



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Assignment 1 - Version control
Project
  Assignment 1
    idea
    out
    src
      Board
      Tasks
      Workers
        Manger
        Normal
        Junior
        Senior
        Normal
        Worker
      Main
      gitignore
      Assignment 1.txt
    External Libraries
    Scratches and Consoles
Main.java Worker.java
1 package Workers;
2
3 /**
4  * The {@code Worker} class represents an employee with basic attributes such as
5  * name, salary, and field type. It provides methods to retrieve worker information
6  * and adjust the salary.
7  *
8  * <p>This class can serve as a base class for more specialized worker types
9  * (e.g., Manager, JuniorWorker, SeniorWorker) using inheritance.</p>
10  *
11  * @author Aly El-Den Yasser
12  * @version 1.0
13  */
14 public class Worker {
15     private final String name;
16     private double salary;
17     /** The field or department type the worker belongs to (e.g., HRs, Sales and Marketing, PRs,
18      * Web Developer, Data Scientists, APP Developers ).*/
19     private final String fieldType;
20
21     /**
22      * Constructs a new {@code Worker} with the specified name, salary, and field type.
23      *
24      * @param name The name of the worker.
25      * @param salary The initial salary of the worker.
26      * @param fieldType The department or field the worker belongs to.
27      */
28     public Worker(String name, double salary, String fieldType) {
29         this.name = name;
30         this.fieldType = fieldType;
31         this.salary = salary;
32     }
33 }
```



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Assignment 1 - Version control
Project
  Assignment 1
    .idea
    out
    src
      Board
      Board
      Tasks
      Workers
        Manger
        Normal
        Junior
        Senior
        Normal
      Worker
      Main
      gitignore
      Assignment 1.txt
    External Libraries
    Scratches and Consoles

Normal.java
1  /**
2   * The {@code Normal} class extends the {@link Worker} class and represents a regular worker
3   * with advanced task management, penalties, bonuses, and salary adjustment features.
4   *
5   * <p><strong>Features:</strong></p>
6   * <ul>
7   * <li>Manage tasks with descriptions, priorities, bounces, and deadlines.</li>
8   * <li>Enforce maximum task limits per worker.</li>
9   * <li>Apply penalties (as percentage deductions) and bonuses to the salary.</li>
10  * <li>Validate user inputs for all task attributes, ensuring data consistency.</li>
11  * <li>Adjust salary through penalties, bonuses, and raises.</li>
12  * <li>Comprehensive checkout system to finalize payments based on tasks.</li>
13  * </ul>
14  *
15  * @version 1.0
16  * @author Aly El-Dewy Yasser Ali
17  */
18
19 package Workers.Normal;
20
21 import Tasks.Tasks;
22 import Workers.Worker;
23
24 import java.time.LocalDate;
25 import java.time.format.DateTimeFormatter;
26 import java.time.format.DateTimeParseException;
27 import java.util.ArrayList;
28 import java.util.Objects;
29 import java.util.Scanner;
30
31 Edit | Explain | Test | Document | Fix
32 public class Normal extends Worker {
33     20 usages 2 inherits
34
35     private double Penalties = 0, Bounces = 0;
36     private double Bonus = 0, Raise = 0;
37
38     removeTask
39
40  tabnine Basic See Tabnine Insights 233:01 CRLF UTF-8 4 spaces
```




```
Assignment 1 - Version control
Current File -> [Icons] [Search] [Settings] [Close] [Exit]

Project -> Assignment 1 -> src -> Workers -> Manger -> Manger.java

1 package Workers.Manger;
2
3 import Workers.Worker;
4
5 /**
6  * The {@code Manger} class extends the {@code Worker} class and represents a manager
7  * with additional authentication details such as a username and password.
8  *
9  * @author Aly El-Deen Yasser Ali
10  * @version 1.0
11  */
12
13 public class Manger extends Worker {
14     /** The manager's username and password used for authentication. */
15     private String Username, Password;
16
17     /**
18      * Constructs a new {@code Manger} with the specified details.
19      *
20      * @param name The manager's name.
21      * @param salary The manager's salary.
22      * @param FieldType The field or department the manager belongs to.
23      * @param Username The manager's username for login.
24      * @param Password The manager's password for login.
25      */
26     public Manger(String name, double salary, String FieldType, String Username, String Password) {
27         super(name, salary, FieldType);
28         this.Username = Username;
29         this.Password = Password;
30     }
31
32     public String getUsername() {
33         return Username;
34     }
35 }
```




```
Assignment 1 - Version control
Current File

Project
  Assignment 1
    idea
    out
    src
      Board
      Board
      Tasks
      Workers
      Main
      .gitignore
      Assignment 1.txt
    External Libraries
    Scratches and Consoles

Tasks.java
1 package Tasks;
2
3 import java.time.LocalDate;
4
5 /**
6  * The {@code Tasks} class represents a task assigned to a worker, including its description,
7  * bonus, priority, status, and deadline.
8  *
9  * <p>It provides methods to manage task details, update status, and check deadlines.</p>
10  *
11  * @author Aly El-Den Yasser
12  * @version 1.1
13  */
14 public class Tasks {
15     private static int idCounter = 1;
16     private int taskID = idCounter++;
17     private String description;
18     private double bonus;
19     private String priority;
20     private LocalDate deadline;
21
22     /**
23      * Constructs a new {@code Tasks} object with the specified details.
24      *
25      * @param description A brief description of the task.
26      * @param bonus The bonus amount associated with the task.
27      * @param priority The priority level of the task.
28      * @param deadline The deadline for task completion.
29      */
30     public Tasks(String description, double bonus, String priority, LocalDate deadline) {
31         this.description = description;
32         this.bonus = bonus;
33         this.priority = priority;
34     }
35 }
```





Nagham Wael:

- Hours of Study: 12h
- Source of Study: Geeks For Geeks +
https://youtube.com/playlist?list=PLCInYL3l2AajYlZGzU_LVrHdoouf8W6ZN&si=tfRlF2iNxOtJehum
- Video Link: <https://youtu.be/VqOBuBvfRiw?si=WCep92XFi12x7LnN>



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1 //Author: Nagham Wael Mohamed Elsayed
2 //ID: 20231189
3 //version: V1.0
4 //First Modified: 22 Feb 2025
5 //Last Modified: 24 Feb 2025
6 //Purpose: a to-do list console program
7 //Features: Add a task , Remove a task , Display task details , Edit a task , Sort tasks , Display list , Clear list , Save list to a file
8
9
10
11 import java.io.FileWriter;
12 import java.io.IOException;
13 import java.time.LocalDate;
14 import java.time.format.DateTimeFormatter;
15 import java.time.format.DateTimeParseException;
16 import java.util.ArrayList;
17 import java.util.Comparator;
18 import java.util.List;
19 import java.util.Scanner;
20
21
22 public class Main {
23
24     // Task class definition
25     static class Task { 4 usages
26         private String name; 4 usages
27         private String description; 4 usages
28         private int priority; // 1 = low, 2 = average, 3 = high 4 usages
29         private LocalDate dueDate; 4 usages
30
31         public Task(String name, String description, int priority, LocalDate dueDate) { 1 usage
32             this.name = name;
33         }
34     }
35 }
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```
1 public class Main {
2     static class Task { //usages
3
4         //getters
5         public String getName() { return name; }
6
7         //this is not used yet but is here for further development in the future
8         public String getDescription() { return description; }
9
10        public int getPriority() { return priority; }
11
12        public LocalDate getDueDate() { return dueDate; }
13
14        public void setName(String name) { this.name = name; }
15
16        public void setDescription(String description) { this.description = description; }
17
18        public void setPriority(int priority) { this.priority = priority; }
19
20        public void setDueDate(LocalDate dueDate) { this.dueDate = dueDate; }
21
22        @Override
23        public String toString() {
24            String priorityString;
25            return "Task{" +
26                "name=" + name + ", " +
27                "description=" + description + ", " +
28                "priority=" + priority + ", " +
29                "dueDate=" + dueDate + " }";
30        }
31    }
32 }
```




```
to_do_list - Version control
Main.java
22 public class Main {
23     //the program's starting point/main function
24     public static void main(String[] args) {
25         boolean running = true;
26
27         //display menu while the program is running(user didn't choose exit)
28         while (running) {
29             printMenu();
30             String choice = scanner.nextLine().trim();
31             switch (choice) {
32                 case "1":
33                     addTask();
34                     break;
35                 case "2":
36                     removeTask();
37                     break;
38                 case "3":
39                     displayTaskDetails();
40                     break;
41                 case "4":
42                     editTask();
43                     break;
44                 case "5":
45                     sortTasks();
46                     break;
47                 case "6":
48                     displayList();
49                     break;
50                 case "7":
51                     clearList();
52                     break;
53                 case "8":
54                     //exit the program
55                     running = false;
56                     break;
57             }
58         }
59     }
60 }
```



```
to_do_list Version control
Main.java
22 public class Main {
23     public static void main(String[] args) {
24     }
25
26     //function for printing the menu
27     private static void printMenu() { //usage
28         System.out.println("\nMain Menu:");
29         System.out.println("1) Add a task");
30         System.out.println("2) Remove a task");
31         System.out.println("3) Display task details");
32         System.out.println("4) Edit a task");
33         System.out.println("5) Sort tasks");
34         System.out.println("6) Display list");
35         System.out.println("7) Clear list");
36         System.out.println("8) Save list to a file");
37         System.out.println("9) Exit");
38         System.out.print("Select an option: ");
39     }
40
41     //take task info through the add task menu option
42     private static void addTask() { //usage
43         System.out.print("Enter Task Name: ");
44         String name = scanner.nextLine().trim();
45
46         System.out.print("Enter Task Description: ");
47         String description = scanner.nextLine().trim();
48
49         int priority = 0;
50         while (true) {
```




```
to_do_list - Version control - Current File - 7 2 4 - Main.java - 15:28 LF UTF-8 4 spaces 4:42 PM 2/25/2025

public class Main {

    //take task info through the add task menu option
    private static void addTask() { //usage
        System.out.print("Enter Task Name: ");
        String name = scanner.nextLine().trim();

        System.out.print("Enter Task Description: ");
        String description = scanner.nextLine().trim();

        int priority = 0;
        while (true) {
            System.out.print("Enter Task Priority (1 for low, 2 for average, 3 for high): ");
            String priorityInput = scanner.nextLine().trim();
            try {
                priority = Integer.parseInt(priorityInput);
                if (priority >= 1 && priority <= 3) {
                    break;
                } else {
                    System.out.println("Invalid input. Priority must be 1, 2, or 3.");
                }
            } catch (NumberFormatException e) {
                System.out.println("Invalid input. Please enter a number (1, 2, or 3).");
            }
        }

        LocalDate dueDate = null;
        while (true) {
            System.out.print("Enter Due Date (day-month-year, e.g., 5-11-2025): ");
            String dateInput = scanner.nextLine().trim();
            try {
                // ...
            }
        }
    }
}
```



```
to_do_list Version control Current File
Main.java
22 public class Main {
23
24 //display task details through display task menu option
25 private static void displayTaskDetails() { //usage
26     if (tasks.isEmpty()) {
27         System.out.println("No tasks to display.");
28         return;
29     }
30     displayList();
31     System.out.print("Enter the number of the task to display details: ");
32     String input = scanner.nextLine().trim();
33     try {
34         int taskNumber = Integer.parseInt(input);
35         if (taskNumber < 1 || taskNumber > tasks.size()) {
36             System.out.println("Error: Task number does not exist.");
37         } else {
38             Task task = tasks.get(taskNumber - 1);
39             System.out.println("\nTask Details:");
40             System.out.println(task.toString());
41         }
42     } catch (NumberFormatException e) {
43         System.out.println("Invalid input. Please enter a valid task number.");
44     }
45 }
46
47 //edit task through the edit task menu option
48 private static void editTask() { //usage
49     //defensive programming validate the list isn't empty
50     if (tasks.isEmpty()) {
51         System.out.println("No tasks to edit.");
52     }
53 }
```

15:28 LF UTF-8 4 spaces 4:42 PM 2/25/2025



```
to_do_list Version control Current File
Main.java
27 public class Main {
283
284 //edit task through the edit task menu option
285 private static void editTask() { //usage
286 //defensive programming validate the list isn't empty.
287 if (tasks.isEmpty()) {
288 System.out.println("No tasks to edit.");
289 return;
290 }
291 displayList();
292 System.out.print("Enter the number of the task to edit: ");
293 String input = scanner.nextLine().trim();
294 try {
295 int taskNumber = Integer.parseInt(input);
296 if (taskNumber < 1 || taskNumber > tasks.size()) {
297 System.out.println("Error: Task number does not exist.");
298 } else {
299 // Edit task: get new information same as addTask
300 Task task = tasks.get(taskNumber - 1);
301 System.out.print("Enter new Task Name: ");
302 String name = scanner.nextLine().trim();
303
304 System.out.print("Enter new Task Description: ");
305 String description = scanner.nextLine().trim();
306
307 int priority = 0;
308 while (true) {
309 System.out.print("Enter new Task Priority (1 for low, 2 for average, 3 for high): ");
310 String priorityInput = scanner.nextLine().trim();
311 try {
312 priority = Integer.parseInt(priorityInput);
313 if (priority >= 1 && priority <= 3) {
314
```



Fatema El-Zhraa Ahmed:

- Hours of Study: 12 hours
- Source of Study :

https://www.youtube.com/playlist?list=PLCInYL3l2AajYlZGzU_LVrHdoouf8W6ZN

- Video Link: https://www.youtube.com/watch?v=fuV9C_FRDf8



```
CS Contact System Version control Current File
Project file.txt ContactManager.java Main.java contact.java UI.java
Contact System C:\U...
  .idea
  out
  src
    ContactsPackage
      contact
      ContactManag
      file.txt
      Main
      UI
      .gitignore
      Contact System.iml
  External Libraries
  Scratches and Console:
Contact System > src > ContactsPackage > ContactManager
14 public class ContactManager { 2 usages
78 private boolean LoadData(){ 1 usage
99
100 File=NameOfFile;
101
102 if(line==null)
103     return true;
104
105 Contacts=new ArrayList<>();
106
107 while (line!=null){
108
109     String name="", phone="", email="";
110     StringBuilder transition= new StringBuilder();
111
112     boolean needAppend=true;
113
114     for (int index = 0, order=0; index < line.length(); index++) {
115
116         char c = line.charAt(index);
117         if(c==' '){
118             order++;
119
120             if (order==1)
121                 name=transition.toString();
122             else if (order==2)
123                 phone=transition.toString();
124             else
125                 email= transition.toString();
126
127             transition.setLength(0);
128             needAppend=false;
```






```
Project: Contact System
  - file.txt
  - ContactManager.java
  - Main.java
  - contact.java
  - UI.java

Contact System
  - src
    - ContactsPackage
      - contact
      - ContactManager
      - file.txt
      - Main
      - UI
      - .gitignore
      - Contact System.iml
  - External Libraries
  - Scratches and Console

public class ContactManager {
    private String validateName(String name) {
        Scanner in = new Scanner(System.in);
        String NameRegex = "[a-zA-z -]*";

        while (name.trim().isEmpty() || !name.matches(NameRegex)) {
            System.out.print("Please Enter a valid name : ");
            name = in.nextLine();
        }
        return name;
    }

    private String validateEmail(String email) {
        Scanner in = new Scanner(System.in);

        String emailPattern = "[a-zA-Z0-9_%.+]{1,64}@([a-zA-Z0-9-]{1,64})\\.([a-zA-Z]{2,6})";
        while (!email.matches(emailPattern)) {
            System.out.print("Please enter correct email : ");
            email = in.nextLine();
        }
        return email;
    }

    private boolean ValidationData(String txt, int stage) {
    }
}
```




```
CS Contact System Version control
Project
  Contact System C:\U...
    .idea
    out
    src
      ContactsPackage
        contact
        ContactManag
      file.txt
      Main
      UI
      .gitignore
      Contact System.lml
    External Libraries
    Scratches and Console
file.txt ContactManager.java Main.java contact.java UI.java
1 package ContactsPackage;
2
3
4 import java.io.IOException;
5
6 import java.util.ArrayList;
7 import java.util.Scanner;
8
9
10 import java.nio.file.*;
11 import java.io.*;
12
13
14 public class ContactManager { 2 usages
15
16     private ArrayList<contact>Contacts; 10 usages
17     private String File; 2 usages
18
19     //Validation codes for data and files
20
21     @ private String validNum(String num){ 2 usages
22
23         Scanner in =new Scanner(System.in) ;
24         String NumberRegex = "^(01\\d{9}|\\d{5})$";
25
26         while (!num.matches(NumberRegex)){
27             System.out.print("Please enter correct format of phone number : ");
28             num= in.nextLine();
29         }
30         return num;
31
32 }
```

Contact System > src > ContactsPackage > ContactManager 210:1 CRLF UTF-8 4 spaces

6:31 PM 2/25/2025



```
CS Contact System Version control
Project
  Contact System C:\Users\...
    .idea
    out
    src
      ContactsPackage
        contact
        ContactManager.java
        file.txt
        Main.java
        UI.java
        .gitignore
        ContactSystem.iml
    External Libraries
    Scratches and Console

file.txt ContactManager.java Main.java contact.java UI.java

5 public class contact { 17 usages
21     contact(String name , String phoneNum , String email){ 2 usages
23         this.phoneNum=phoneNum;
24         this.email=email;
25     }
26
27     public String toString(){ 3 usages
28         return "Name : "+name+" Phone number : "+phoneNum+" Email : "+email;
29     }
30
31     @Override
32     public boolean equals(Object obj){
33
34         if(this==obj)
35             return true;
36         if(obj==null||getClass()!=obj.getClass())
37             return false;
38         contact Contact = (contact) obj;
39
40         return Objects.equals(name,((contact) obj).name)
41             &&Objects.equals(email,((contact) obj).email)
42             &&Objects.equals(phoneNum,((contact) obj).phoneNum);
43     }
44 }
45
46 }
47

Contact System > src > ContactsPackage > contact > equals
32:18 CRLF UTF-8 4 spaces
```



```
1 package ContactsPackage;
2
3 import java.util.Objects;
4
5 public class contact { 17 usages
6
7     private final String name , phoneNum , email; 5 usages
8
9     public String getName(){ 3 usages
10         return name;
11     }
12
13     public String getPhoneNum(){ 3 usages
14         return phoneNum;
15     }
16
17     public String getEmail(){ 2 usages
18         return email;
19     }
20
21     contact(String name , String phoneNum , String email){ 2 usages
22         this.name=name;
23         this.phoneNum=phoneNum;
24         this.email=email;
25     }
26
27     public String toString(){ 3 usages
28         return "Name : "+name+" Phone number : "+phoneNum+" Email : "+email;
29     }
30
31     @Override
32     public boolean equals(Object obj){
```

Project: Contact System

- src
 - ContactsPackage
 - contact
 - ContactManag

32:18 CRLF UTF-8 4 spaces

6:30 PM 2/25/2025



LCNC



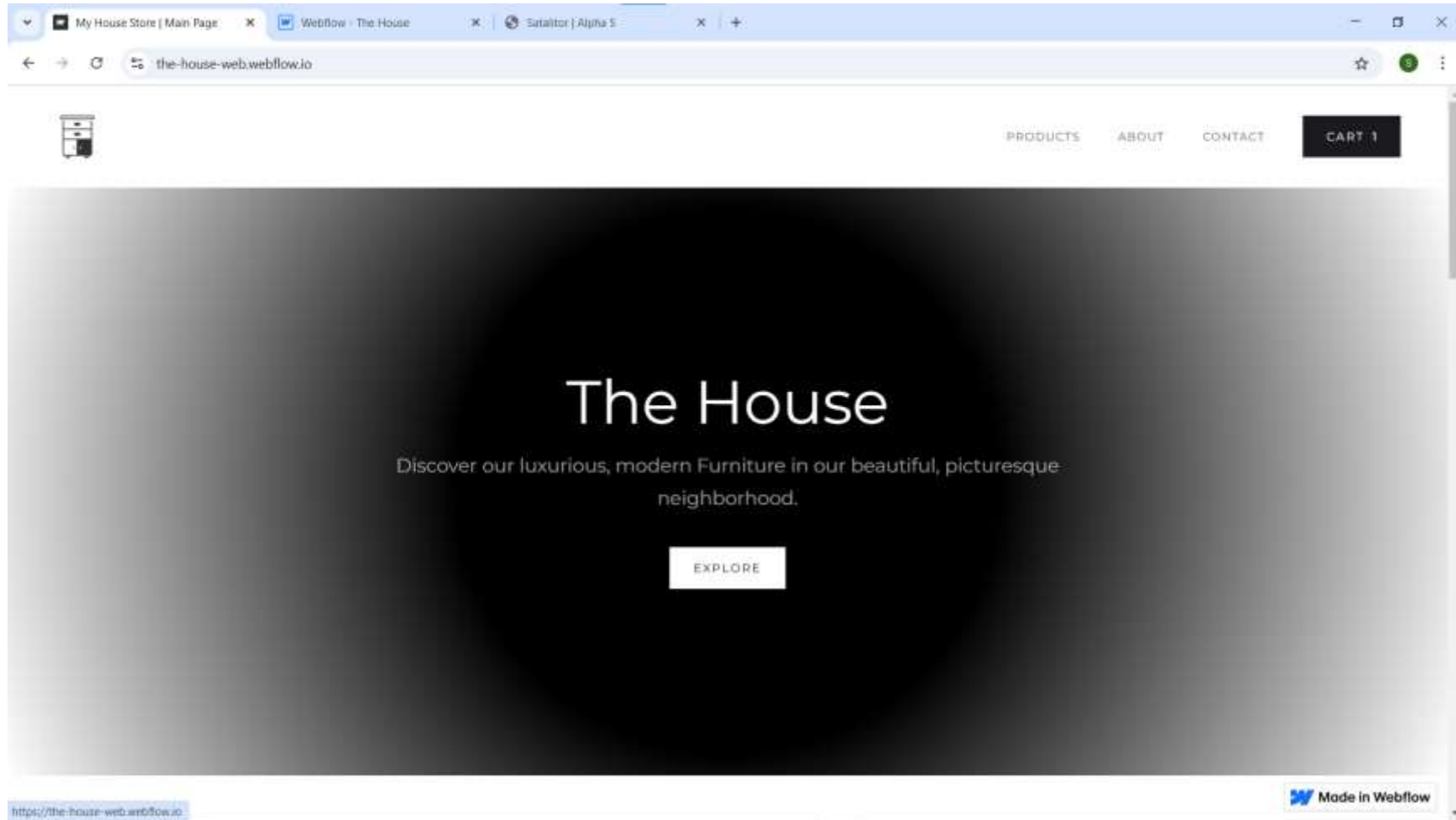
Compare Between Two LCNC Tools:

Key of Compare	WebFlow	Thunkable
Purpose	Website design and development	Mobile app development (iOS & Android)
Target Users	Designers, developers, and businesses looking to create responsive websites	Individuals and businesses looking to create mobile apps without coding
Drag-and-Drop Interface	Yes, for building websites visually	Yes, for building mobile apps using a block-based interface
Export Code	Can export HTML, CSS, and JavaScript	No direct code export; apps are built within Thunkable's environment
Use Cases	Landing pages, business websites, e-commerce stores, blogs, and portfolios	Prototyping, MVPs, mobile app development for business, education, and personal projects



Website link : <https://the-house-web.webflow.io/products>

Video link: https://youtu.be/c071WQAifNM?si=sWq_lknsMG3GbJbN






My House Store | Main Page | Webflow - The House | Satalitor | Alpha 5


the-house-web.webflow.io

Featured Products


Check out new and popular products



LA MALE SOFA

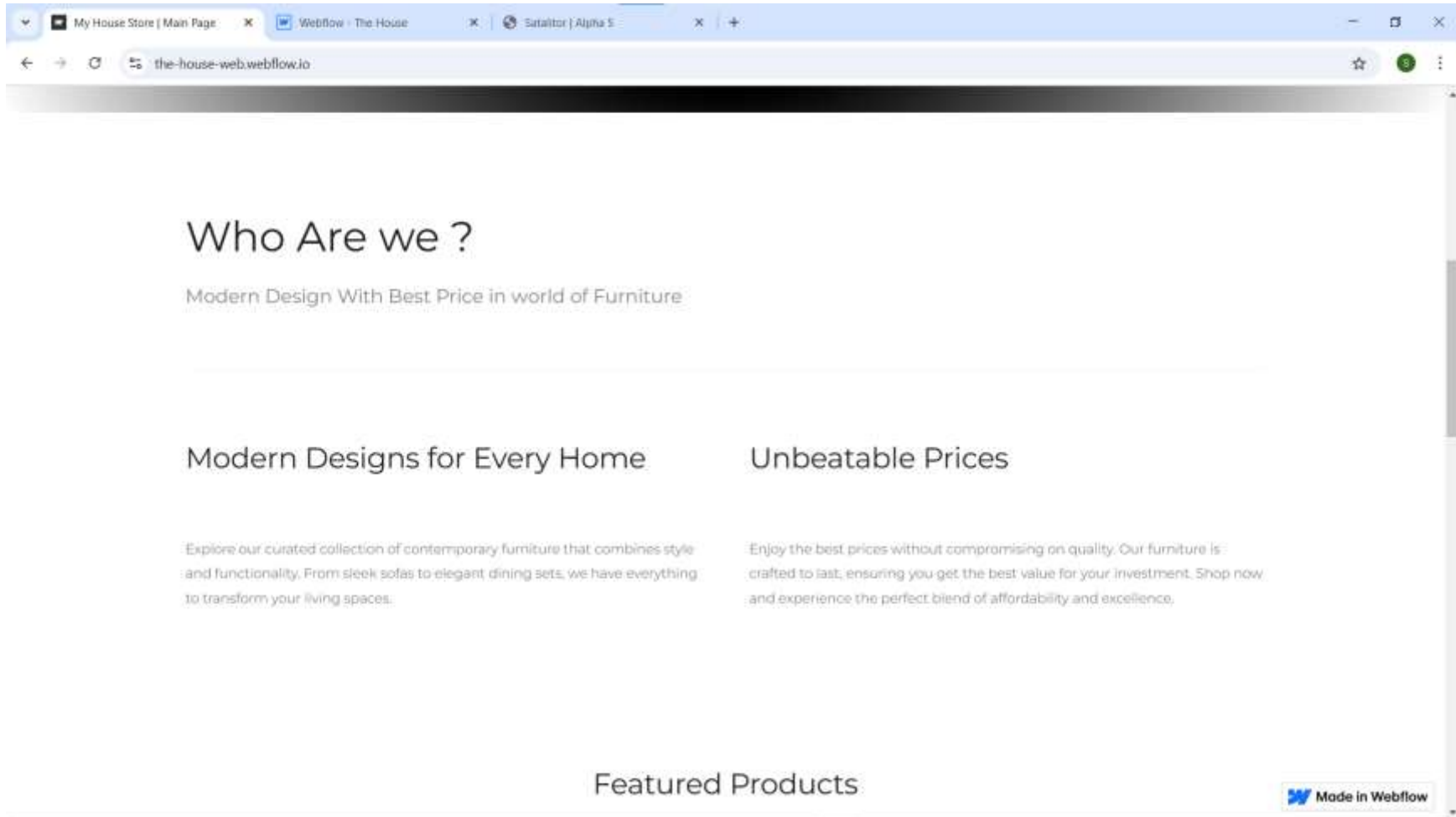


CHAIR 1



SIMPLICITY CHAIR

Made in Webflow





Web browser tabs: Contact, Webflow - The House, Satalitor | Alpha S

Address bar: the-house-web.webflow.io/contact

Navigation links: PRODUCTS, ABOUT, CONTACT, CART 0

Get in touch

Hey there, fill out this form

NAME:

EMAIL ADDRESS:

MESSAGE:

SUBMIT

Made in Webflow



Web browser tabs: Contact, Webflow - The House, Screenshot | Alpha 5

Address bar: the-house-web.webflow.io/contact

Get in touch

Hey there, fill out this form


NAME

EMAIL ADDRESS

MESSAGE

SUBMIT

YOUR CART



SIMPLICITY CHAIR

\$ 40.00 USD

REMOVE

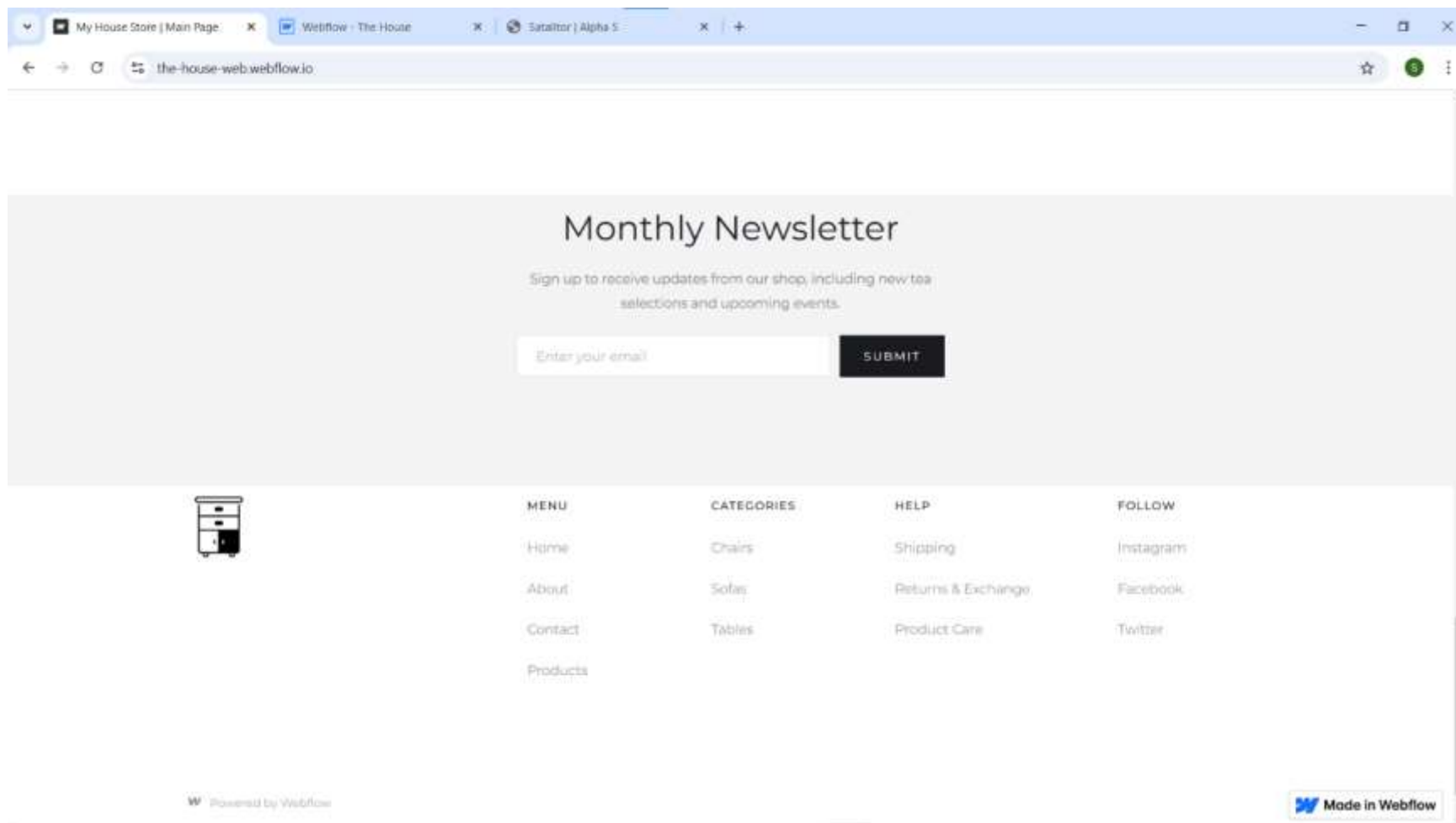
1

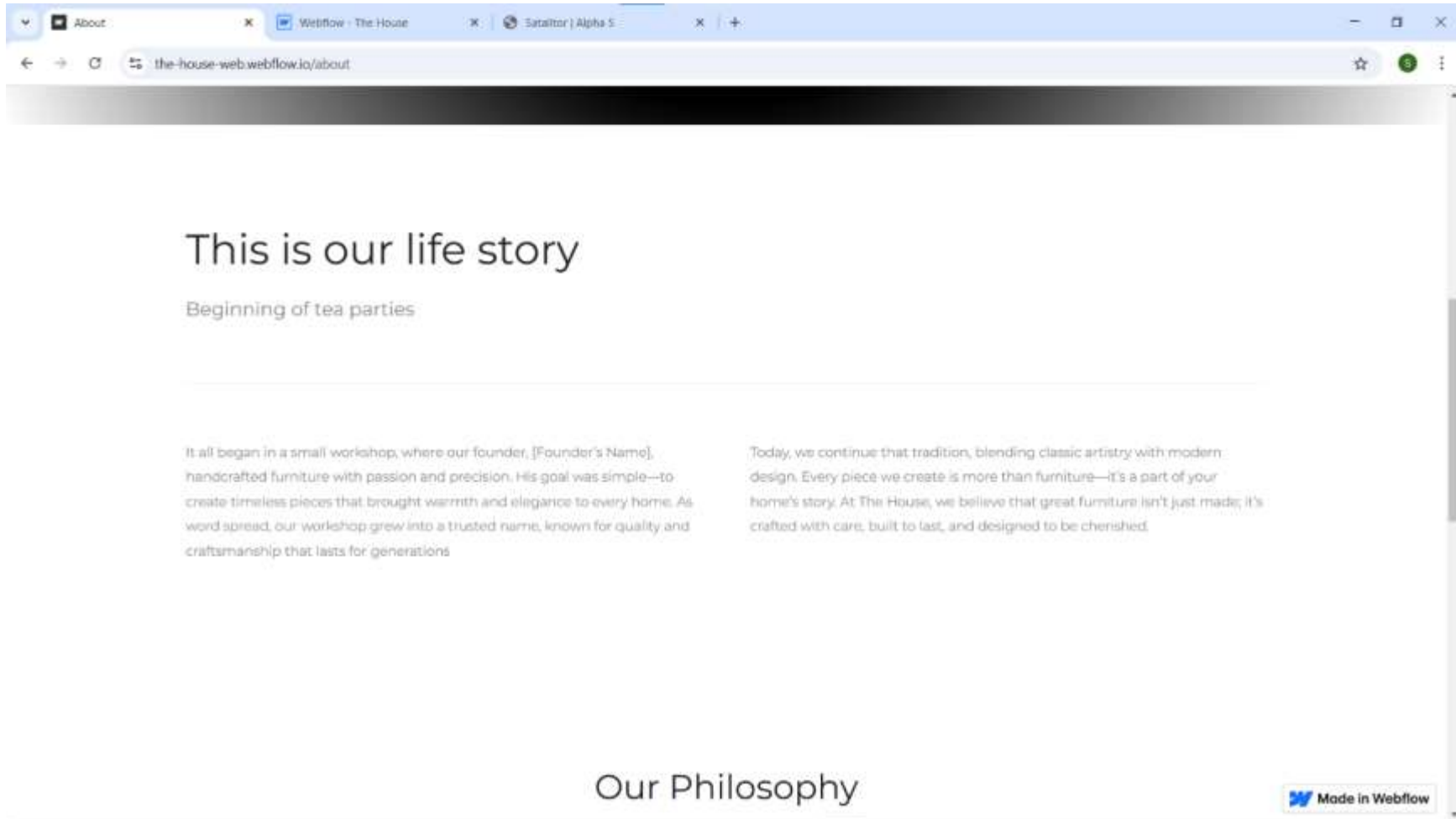
Subtotal

\$ 40.00 USD

CONTINUE TO CHECKOUT

Made in Webflow







SRS Report

Personal Investment Management Software



Phrase	Definition
ROI (Return on Investment)	A financial metric that calculates the profitability of an investment.
Portfolio Tracking	Monitoring different assets and investments in real-time.
Asset Allocation	The strategy of diversifying investments across different asset classes.
Net Worth Computation	A feature that calculates a user's total financial worth (assets - liabilities).
API (Application Programming Interface)	A set of protocols for integrating with banking systems, stock exchanges, and payment gateways.
Debt Management	Features that automate debt repayment using a predefined percentage of monthly income.
Unbanked & Underbanked	Individuals without full access to traditional banking services, relying on cash or mobile wallets.
Cloud-Based Deployment	Hosting the application on cloud services such as AWS, Google Cloud, or Azure for scalability.



Functional Requirements

Requirement ID	Requirement Statement
FR01	The First screen appears to the user is the login/sign-up screen
FR02	The application will redirect to the screen showing to two input boxes for the username and password in case the user chooses to log in
FR03	The application checks the registered credentials for security and to enable the user to log in. Also, he could reset his/her password through sending link to his/her email
FR04	The application will show the signup screen if the user chooses to sign up showing some required fields to fill in such as name, username, password, email, phone number, country, city, National ID, Bank account number and Different investments.
FR05	<p>The application will redirect you to your dashboard which consists of:</p> <ol style="list-style-type: none"> Some computations of net-worth and rate of investment Some graphs and visualizations displaying how the investment flows and how much more do I need to reach the specified financial target. The financial obligations that must be settled



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Usability	<ul style="list-style-type: none">• The platform should be easy to use with a clear dashboard and real-time graphs.• The system must work seamlessly across mobile, tablets, and desktops, adapting to screen sizes dynamically.
Portability and compatibility	<ul style="list-style-type: none">• The application should work on Windows, macOS, Linux, iOS, and Android without performance issues.• App should support for multiple payment methods• App should be multilingual, as it should be available in Arabic, English, and other regional languages.

