Parking Pal

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Project Objective

Overview
- o Parking Pal is a mobile app showing real-time campus parking availability

Features
- o View lot occupancy, location filtering, event/construction alerts, navigation

Timeline
- o Nov 2024: Project starts
- o Aug 2026: App launch for the fall semester.

Coded Work Breakdown Structure

1. Research
- 1.1 Market Demand Analysis
- 1.1.1 Surveying
- 1.1.2 Polling
- 1.2 User Requirements
- 1.2.1 Focus group
- 1.3 Technological requirements

2. Planning
- 2.1 Schedule Development
- 2.2 Project Analysis
- 2.2.1 Budget
- 2.2.2 Risk Management
- 2.3 Resource Allocation

3. Design
- 3.1 Develop System Architecture
- 3.2 Database Structure
- 3.2.1 Design Entity Relationship Diagram
- 3.3 User Interface Design
- 3.3.1 Wireframe
- 3.3.2 Mockups

4. Development
- 4.1 Front End Development
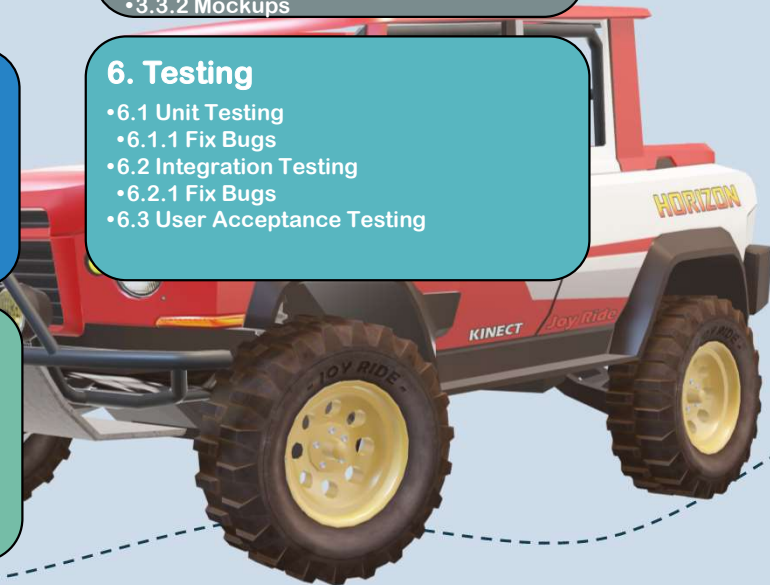- 4.2 Database Setup
- 4.3 API Integration

5. Hardware
- 5.1 Camera Hardware Installation
- 5.2 Software Integration With App
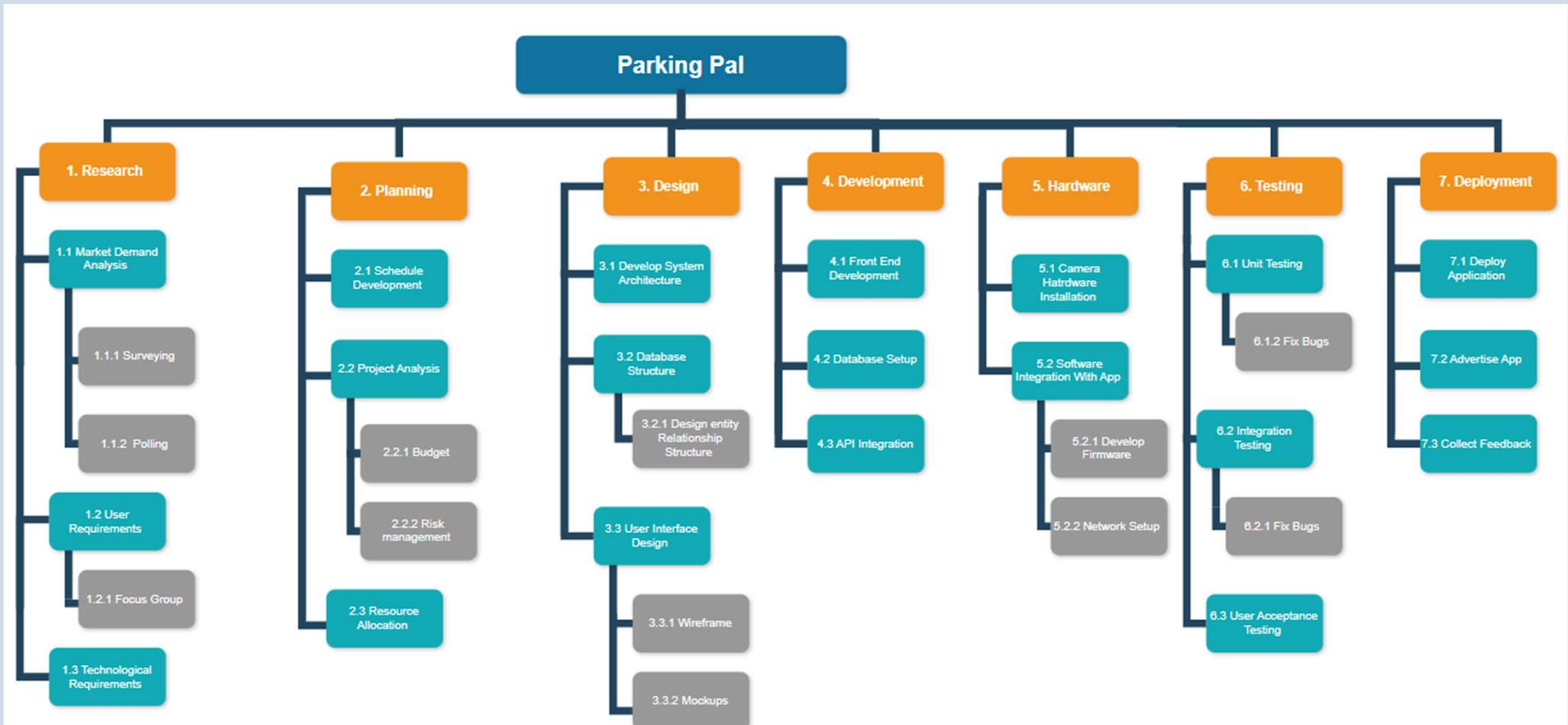- 5.2.1 Develop Firmware
- 5.2.2. Network Setup

6. Testing
- 6.1 Unit Testing
- 6.1.1 Fix Bugs
- 6.2 Integration Testing
- 6.2.1 Fix Bugs
- 6.3 User Acceptance Testing

7. Deployment
- 7.1 Deploy application
- 7.2 Advertise App
- 7.3 Collect Feedback

Cost Breakdown Chart

Total project cost to initiate the start of ParkingPal will be $445,000

| Category	Description	Cost
Materials	Cloud Service (Azure)	$5,000
Resources	Project Manager	$65,000
Resources	Mobile App Developer, iOS and Android	$70,000
Resources	UI/UX Designer	$50,000
Resources	Backend Developer	$75,000
Resources	Database Administrator	$45,000
Resources	Marketing Manager	$40,000
Resources	Security Manager	$70,000
Expenses	Project Management Tool (Jira)	$200
Expenses	UI/UX Design Tool (Figma)	$500
Expenses	Testing and QA Software (BrowserStack)	$500
Expenses	App Store Fees	$300
Expenses	Marketing and Promotion	$4,000
Support Costs	App Maintenance and Updates	$9,000
Support Costs	Data Backup and Security Updates	$2,500
Support Costs	Real-time Notification System Maintenance	$3,000
Support Costs	Integration and API Management	$5,000
	Total	$445,000

Revenues and Net Income Chart

Activities	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Total Project Costs	$445,000	–	–	–	–	–
Estimated Number of Free Users	–	12,614	24,858	37,289	50,007	63,243
Unit Price (App - per university)	–	$100,000	$100,000	$100,000	$100,000	$100,000
Number of Universities	–	1	2	3	4	5
Fixed Ad Revenue	–	$300,000	$400,000	$550,000	$750,000	$1 M
Total Revenue	–	$400,000	$800,000	$1.1 M	$1.45 M	$1.8 M
Total Cost (Support Costs + Marketing)	–	$55,000	$70,000	$85,000	$100,000	$115,000
Net Profit	-$445,000	$345,000	$730,000	$1.02 M	$1.35 M	$1.68 M

Return on Investment

ROI

NPV

PP
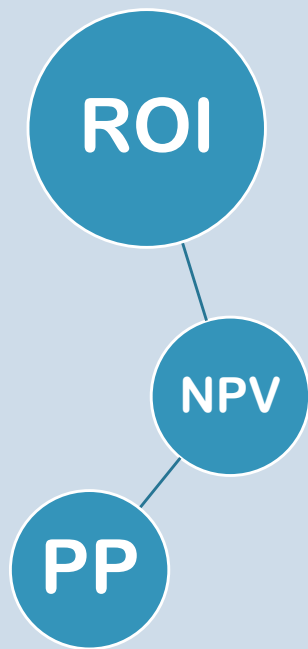
5 Year Return on Investment (ROI)	
Total Profit (first 5 years)	**$5.125 M**
Initial Investment	**$445,000**
Return on Investment (ROI)	**1,053.93%**

Net Present Value

ROI

NPV

PP

Net Present Value 5 Year Forecast (NPV)	
Initial Investment	$445,000
Cash Flows on an Annual Basis (Net Profit/Year)	
Year 1	$345,000
Year 2	$730,000
Year 3	$1,020,000
Year 4	$1,350,000
Year 5	$1,680,000
Discount Rate	15%
Net Present Value	$2,682,000

Payback Period

Payback Period	
Year # (before full recovery)	2 years
Estimated Project Cost	$445,000
Annual Savings	$345,000
Payback Period (years)	1.29

NPV

ROI

PP

Identified Project Risks

Integration Risks

Notification Challenges

App Design

Scalability

Scope Creep

Budget Overruns

Risk Assessment Form

| Risk	Likelihood	Impact	Detection Difficulty	When
Integration Risks	Medium	High	Medium	Early development phase
Notification Challenges	High	Medium	Medium	During testing phase
App Design	Medium	Medium	High	During design phase
Scalability	Medium	High	Medium	During performance testing
Scope Creep	High	Medium	Low	Throughout project lifecycle
Budget Overruns	Medium	High	Low	During budgeting phase and project execution

Risk Response Matrix

| Risk Event	Response	Contingency Plan	Trigger	Who is Responsible
Integration Risks	Thorough testing and early integration planning	Engage expert consultants for integration if issues arise	Issues found during integration testing	Project manager
Notification Challenges	Implement a reliable notification service, with redundancy systems.	Use fallback mechanisms like email notifications if real-time notifications fail	Failed or delayed real-time notifications during testing or live use.	Quality Team
App Design	Hire professional user interface designers and conduct extensive user testing.	Revise design based on user feedback if initial design fails.	User testing feedback indicating confusion or dissatisfaction.	Design Team
Scalability	Design scalable infrastructure (e.g., cloud-based). Conduct load testing	Optimize backend infrastructure or add resources as needed (e.g., cloud scaling).	Performance issues or slowdowns during load testing or peak usage.	Technical lead
Scope Creep	Set clear project scope and have a strict change control process.	Limit feature additions and prioritize essential features.	Requests for additional features or changes during the development process	Project manager, product owner
Budget Overruns	Continuously monitor and track project spending against budget.	Secure additional funding or reduce scope if costs exceed budget.	Significant deviation from budget estimates during regular reviews.	Project manager, Finance team

Project Plan

	Task	Duration	Predecessor	Start	Finish
A	1.1 Market Demand Analysis	20	none	1/1/2025	1/21/2025
B	1.2 User requirements	10	A	1/21/2025	1/31/2025
C	1.3 Technical Requirements	10	A	1/21/2025	1/31/2025
D	2.1 Schedule Development	15	B,C	1/31/2025	2/15/2025
E	2.2 Project Analysis	35	D	2/15/2025	3/22/2025
F	2.3 Resource Allocation	10	E	3/22/2025	4/1/2025
G	3.1 Develop Systems Architecture	60	F	4/1/2025	5/31/2025
H	3.2 Database Structure	50	F	4/1/2025	5/21/2025
I	3.3 User Interface Design	40	F	4/1/2025	5/11/2025
J	4.1 Front End Development	195	G,H,I	5/31/2025	12/12/2025
K	4.2 Database Setup	95	G,H,I	5/31/2025	9/3/2025
L	4.3 API Integration	80	G,H,I	5/31/2025	8/19/2025
M	5.1 Camera Hardware Installation	40	J,K,L,	12/12/2025	1/21/2026
N	5.2 Software Integration With App	70	M	1/21/2026	4/1/2026
O	6.1 Unit Testing	50	N	4/1/2026	5/21/2026
P	6.2 Integration testing	60	N	4/1/2026	5/31/2026
Q	6.3 User Acceptance Testing	70	O,P	5/31/2026	8/9/2026
R	7.1 Deploy Application	25	Q	8/9/2026	9/3/2026
S	7.2 Advertise App	50	R	9/3/2026	10/23/2026
T	7.3 Collect Feedback	50	R	9/3/2026	10/23/2026
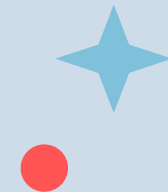
Gantt Chart
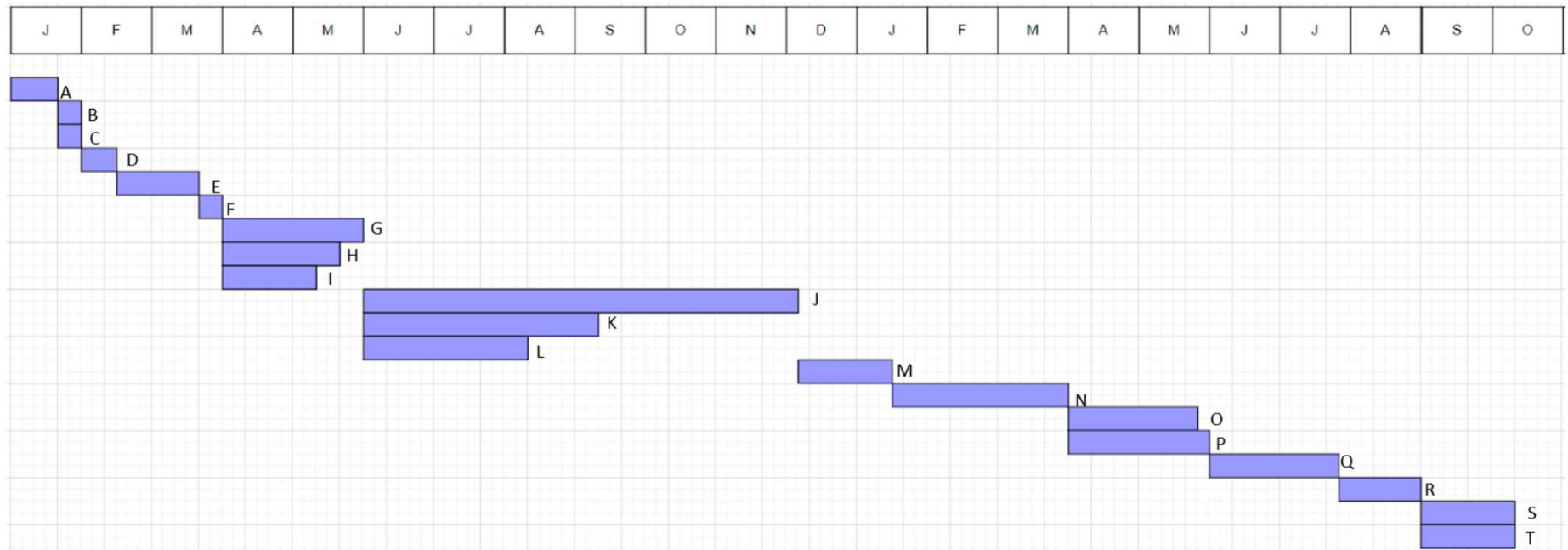
Activity	Project Manager	Software Developer	Technical Support Engineer	Financial Data Analyst
1.1 Market Demand Analysis	S			R
1.2 User requirements	S	R	S	I
1.3 Technical Requirements	S	S	R	I
2.1 Schedule Development	R			S
2.2 Project Analysis	S			R
2.3 Resource Allocation	R			S
3.1 Develop Systems Architecture	I	R	S	
3.2 Database Structure	I	S	R	
3.3 User Interface Design	I	S	R	
4.1 Front End Development	I	R	S	
4.2 Database Setup	I	S	R	
4.3 API Integration	I	R	S	
5.1 Camera Hardware Installation	I	S	R	
5.2 Software Integration With App	I	R	S	
6.1 Unit Testing	I	R	S	
6.2 Integration testing	I	R	S	
6.3 User Acceptance Testing	R	S	S	
7.1 Deploy Application	S	R	S	
7.2 Advertise App	S			R
7.3 Collect Feedback	S	I	I	R

Responsibility Matrix

R = Responsible
S = Support
I = Informed

Project Closure Checklist

#	Task	Completed? Y/N
Schedule & Resources		
1	Have all project milestones and deadlines been met, and was the project completed within the agreed timeframe?	Y
2	Have all project resources, including team members and external vendors, been effectively utilized and aligned with the project's needs?	Y
3	Has the final project budget been reconciled, and were all expenses properly accounted for?	Y
4	Have lessons about resource management and scheduling been documented for future projects?	Y
5	Are all team contributions recognized, and have the necessary resources been transitioned for post-project support?	Y
Organization & Management		
5	Has final approval been obtained from key stakeholders, including the CEO, Sabrina Carpenter?	Y
6	Is all project documentation complete and stored for future reference?	Y
7	Have all contracts with external vendors been closed, and were all deliverables met?	Y
8	Has a final project report summarizing performance and outcomes been delivered?	Y
9	Have post-project responsibilities, such as maintenance and support, been handed over to the appropriate teams?	Y
Hardware & Software Requirements		
10	Does the app meet the hardware and software specifications outlined in the project plan?	Y
11	Are all necessary platforms, tools, and integrations fully configured and functional?	Y
12	Have any configurations required for future updates been documented?	Y
13	Did all users in the testing process provide positive feedback?	Y
App Launch		
14	Has the app been fully tested, and are any issues resolved before launch?	Y
15	Is the app ready for deployment, with the necessary approvals in place?	Y
16	Are systems in place for post-launch monitoring and user support?	Y
17	Is user documentation available, and have communications been sent to stakeholders and users?	Y

Lessons Learned

Thorough Testing

Planning Scalability

Profitability

Stakeholder Management

Team Communication

Finished Project Mockup