**PROJECT NAME: Parking Automation System**

**GROUP MEMBERS:**

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| TASK # | PROJECT TASKS WHICH REQUIRE SOFTWARE TOOL SUPPORT |
| 1 | Mobile Application Development Language |
| 2 | AI & Sensor Management |
| 3 | Database Management, Reporting & Analytics |
| 4 | UI/UX Design |
| 5 | IDE & Development Environment |

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| SOFTWARE TOOLS FOR TASK 1: Mobile Application Development Language |
| Tool Cost/Training/Functionality Data   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Tool | Flutter | React Native | Kotlin | Swift |  |  |  |  | | Cost | Free | Free | Free | Free |  |  |  |  | | Training Days | 5 | 5 | 4 | 6 |  |  |  |  | | Functionality | 95 | 90 | 98 | 99 |  |  |  |  |   Normalized Cost/Training/Functionality Data   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Tool | Flutter | React Native | Kotlin | Swift |  | | Cost | 0 | 0 | 0 | 0 | | Training Days | 83,3 | 83,3 | 66,6 | 100 | | Functionality | 95,95 | 90,90 | 98,98 | 100 |   Normalized Tool Graph |
| Which tool has been selected? Why?  • Selected Tools:  -Flutter  • Justification:  Flutter offers powerful cross-platform mobile app development capabilities (Android & iOS) with  high performance, lower costs, and rapid development. |
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| SOFTWARE TOOLS FOR TASK 2: AI & Sensor Management |
| Tool Cost/Training/Functionality Data   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Tool | TensorFlow | Raspberry Pi | OpenCV | Arduino |  |  |  |  | | Cost | Free | $100 | Free | $20 |  |  |  |  | | Training Days | 6 | 3 | 4 | 2 |  |  |  |  | | Functionality | 98 | 95 | 90 | 80 |  |  |  |  |   Normalized Cost/Training/Functionality Data   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Tool | TensorFlow | Raspberry Pi | OpenCV | Arduino | | Cost | 0 | 100 | 0 | 20 | | Training Days | 100 | 50 | 66.6 | 33.3 | | Functionality | 100 | 96.9 | 91.8 | 81.6 |   Normalized Tool Graph | |
| Which tool has been selected? Why?  • Selected Tools:  - TensorFlow  - Raspberry Pi  • Justification:  TensorFlow is a powerful, reliable open-source platform ideal for advanced AI-based image  processing and automated license plate recognition.  Raspberry Pi provides robust hardware integration, supports multiple sensors effectively, and is  ideal for real-time data collection and processing at a reasonable cost. |

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| SOFTWARE TOOLS FOR TASK 3: Database Management, Reporting & Analytics |
| Tool Cost/Training/Functionality Data   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Tool | Firebase Realtime Database | MongoDB Atlas | MySQL | Power BI | | Cost | $0.18/Gb | $0.25/Gb | Free | Free | | Training Days | 3 | 5 | 4 | 4 | | Functionality | 96 | 95 | 90 | 98 |   Normalized Cost/Training/Functionality Data   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Tool | Firebase Realtime Database | MongoDB Atlas | MySQL | Power BI | | Cost | 72 | 100 | 0 | 0 | | Training Days | 60 | 100 | 80 | 80 | | Functionality | 97.9 | 96.9 | 91.8 | 100 |   Normalized Tool Graph |
| Which tool has been selected? Why?  • Selected Tools:  - Firebase Realtime Database  - Power BI  • Justification:  Firebase Realtime Database provides seamless, scalable, real-time synchronization and efficient mobile app integration.  Power BI delivers strong analytical capabilities, excellent data visualization, detailed reporting, and insightful dashboards to enhance decision-making. |

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| SOFTWARE TOOLS FOR TASK 4: UI/UX Design |
| Tool Cost/Training/Functionality Data   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Tool | Figma | Adobe XD | Sketch | Framer | | Cost | $500 | $600 | $110 | $300 | | Training Days | 2 | 3 | 4 | 3 | | Functionality | 95 | 85 | 93 | 90 |   Normalized Cost/Training/Functionality Data   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Tool | Figma | Adobe XD | Sketch | Framer | | Cost | 83,3 | 100 | 18,3 | 50 | | Training Days | 50 | 75 | 100 | 75 | | Functionality | 100 | 89,47 | 97,89 | 94,73 |   Normalized Tool Graph |
| Which tool has been selected? Why?  • Selected Tools:  -Figma  • Justification:  Figma is intuitive, collaborative, and efficient for UI/UX design and prototyping, with strong team-collaboration support. |

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| SOFTWARE TOOLS FOR TASK 5: IDE & Development Environment |
| Tool Cost/Training/Functionality Data   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Tool | Android Studio | Visual Studio Code | IntelliJ IDEA | Xcode | | Cost | Free | Free | Free | Free | | Training Days | 4 | 3 | 4 | 4 | | Functionality | 100 | 95 | 95 | 98 |   Normalized Cost/Training/Functionality Data   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Tool | Android Studio | Visual Studio Code | IntelliJ IDEA | Xcode | | Cost | 0 | 0 | 0 | 0 | | Training Days | 100 | 75 | 100 | 100 | | Functionality | 100 | 95 | 95 | 98 |   Normalized Tool Graph |
| Which tool has been selected? Why?  • Selected Tools:  - Visual Studio Code (VS Code)  • Justification:  Visual Studio Code (VS Code) has been selected for its cross-platform support, enabling both iOS and Android development. It is lightweight, fast, and offers excellent Flutter and Dart integration with features like Hot Reload and Git support. Its minimal resource usage and powerful extensions make it ideal for efficient and flexible development. |