**Assignment #2**



Submitted to

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Subject: **Software Engineering**

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**Functional and Non-Functional Requirements of the following Systems:**

1. Mobile Phone System
2. ATM Machine System
3. Online Examination System
4. Missile System
5. **Mobile Phone System**

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| **Functional Requirements** | **Non-Functional Requirements** |
| 1.1. Users must be able to make and receive calls. | 1.1. Availability: The system should be available 99.9% of the time. |
| 1.2. The system should support text messaging (SMS). | 1.2. Performance: The system should respond to user interactions within 1 second. |
| 1.3. Users should be able to access the internet and browse websites. | 1.3. Security: User data and communications must be encrypted and secure. |
| 1.4. The system must support the installation and execution of mobile apps. | 1.4. Battery Life: The system should optimize power consumption for longer battery life. |
| 1.5. Users should be able to store and manage contacts. | 1.5. User Interface: The user interface should be intuitive and user-friendly. |

1. **ATM Machine System**

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| Functional Requirements | Non-Functional Requirements |
| 2.1. Users must be able to withdraw cash from their bank accounts. | 2.1. Security: The system should be highly secure to prevent unauthorized access. |
| 2.2. Users should be able to check their account balance. | 2.2. Availability: The ATM should be available 24/7. |
| 2.3. The system must allow users to deposit funds into their accounts. | 2.3. Performance: Transactions should be processed within 30 seconds. |
| 2.4. Users should be able to change their PIN (Personal Identification Number). | 2.4. Reliability: The system should have a mean time between failures (MTBF) of at least 10,000 hours. |
| 2.5. The system must provide a receipt for every transaction. | 2.5. Usability: The interface should be easy to use for people of all ages |

1. **Online Examination System**

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| **Functional Requirements** | **Non-Functional Requirements** |
| 3.1. Users (students) should be able to log in to the system. | 3.1. Security: The system should prevent cheating or unauthorized access to exam materials. |
| 3.2. Instructors must be able to create and manage exams. | 3.2. Performance: The system should support simultaneous exams for a large number of users. |
| 3.3. Students should be able to take exams with a timer. | 3.3. Scalability: The system should handle a growing number of students and exams. |
| 3.4. The system should automatically grade multiple-choice questions. | 3.4. Usability: The user interface should be intuitive and easy to navigate. |
| 3.5. Users should be able to view their exam results. | 3.5. Reliability: The system should have a low error rate in grading. |

1. **Missile System**

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| **Functional Requirements** | **Non-Functional Requirements** |
| 4.1. The system should be able to target and track enemy objects. | 4.1. Security: The system must have strong encryption and authentication mechanisms. |
| 4.2. Users should be able to launch missiles. | 4.2. Reliability: The system should operate without failures in combat situations. |
| 4.3. The system must provide real-time feedback on missile status. | 4.3. Safety: The system must have fail-safes to prevent accidental launches. |
| 4.4. The system should allow users to abort missile launches. | 4.4. Performance: The system must respond to target changes within milliseconds. |
| 4.5. Missiles should have different types and capabilities (e.g., anti-air, anti-ship). | 4.5. Redundancy: The system should have redundant components for fault tolerance. |