**Homework 3: Requirements**

**Requirements for gasoline pump**:

**Function – “Credit Card Option Selected.”**

Requirement 1 – The Credit Card Input System shall provide the customer with a display capable of fitting at least 50 alphanumeric characters at a given time.

1. The object of this requirement is to provide the customer with a readable display that can contiguously present needed information.

2. The object is a quantitative product parameter.

3. The requirement is a functional requirement.

Requirement 2 – The Credit Card Input System shall provide the customer with the ability to select an option from a display.

1. The object of this requirement is to provide the customer with a way to interact with the system.

2. The object is a qualitative product parameter.

3. The requirement is an interface Requirement.

**Function – “Card is read.”**

Requirement 1 – The Credit Card Reader Subsystem shall provide the customer with an interface to read standard sized credit cards.

1. The object of the requirement is to provide an interface that reads in the customer credit card and translates it into electronic pulses.

2. The object is a qualitative product parameter.

3. The requirement is an interface requirement.

Requirement 2 – The Credit Card reader Subsystem shall interface with the Central Computer.

1. The object of the requirement is to provide a way to take the readable bytes from the pulses produced from reading the card and formatting the data in such a way that a computer can interpret.

2. The object is a qualitative product parameter.

3. The requirement is an interface requirement.

**Function – “Information communicated to Credit Card Company.”**

Requirement 1 – The Central Computer System shall provide a means of communicating with The Credit Card Company.

1. The object of this requirement is to provide a way to communicate card details with the Credit Card Company.

2. The object is a qualitative product parameter.

3. The requirement is a functional requirement.

Requirement 2 – The Central Computer System shall provide a way to encrypt Credit Card information that is being transmitted to the Credit Card Company.

1. The object of the requirement is to meet regulatory requirements governed by laws or policies.

2. The object is a regulatory-program parameter.

3. The requirement is a functional requirement.

**Requirements for Attitude Control System:**

**Function – “Determine attitude needed for communication”**

Requirement 1 – The Attitude Determination System shall provide a quality of communication meeting the low earth orbit communication standard.

1. The object of the requirement is to meet a standard of communication to a low earth orbit satellite.

2. The object is a quantitative-product parameter.

3. The requirement is a functional requirement.

Requirement 2 - The Attitude Determination System shall be capable of determining attitude without the use of the Sun Sensor.

1. The object of this requirement is to determine the attitude without the use of the onboard sun sensor, so some other device(s) to measure attitude.

2. The object is a qualitative-product parameter.

3. The requirement is a functional requirement.

**Function – “Find estimated direction of earth”**

Requirement 1 – The Earth Sensor Subsystem shall be able to determine the earth center with no more than 5 arc minutes of error.

1. The object of this requirement is to provide the system with a specific error range.

2. The object is a quantitative-product parameter.

3. The requirement is a functional requirement.

Requirement 2 – The Earth Sensor Subsystem shall weigh no more than 2 Newtons at sea level.

1. The object of this requirement is to provide the system with a maximum weight for an earth sensor.

2. The object is a quantitative-product parameter.

3. The requirement is a functional requirement.

**Function – “Calculate rotation needed to correct attitude”**

Requirement 1 – The Rotation Algorithm Subsystem shall provide the rotation needed to correct the rotation in less than 5 seconds at all times or no solution at all.

1. The object of this requirement is to provide a solution in less than 5 seconds or to discard anything that isn’t the solution if it takes more than 5 seconds.

2. The object is a quantitative-product parameter.

3. The requirement is a functional requirement.

Requirement 2 – The Rotation Algorithm Subsystem shall be capable of a rotation matrix solution with less than 5 arc minutes of total error.

1. The object of this requirement is to provide a solution that has limited error.

2. The object is a quantitative-product parameter.

3. The requirement is a functional requirement.