Task 1 – Development Exercise

In a language of your choosing create a program that accepts a given text file and produces the following stats:

- Word count
- Longest word
- Shortest word
- Average word length

Provide the source code and compilation / execution instructions.

Task 2 – Critical Thinking

Please study the following excerpt, diagram, and appendix 1. Complete the task outlined on the following page.

Overview

An automated system moves containers of radioactive waste along a conveyor belt.

The system detects anomalies and diverts hazardous materials to rejection or quarantine areas.

New containers are added to the belt at a maximum frequency of 1 per minute.

Light sensors detect if an object is present at their respective position on the belt.

A sonar sensor checks for conformity in the shape of the container.

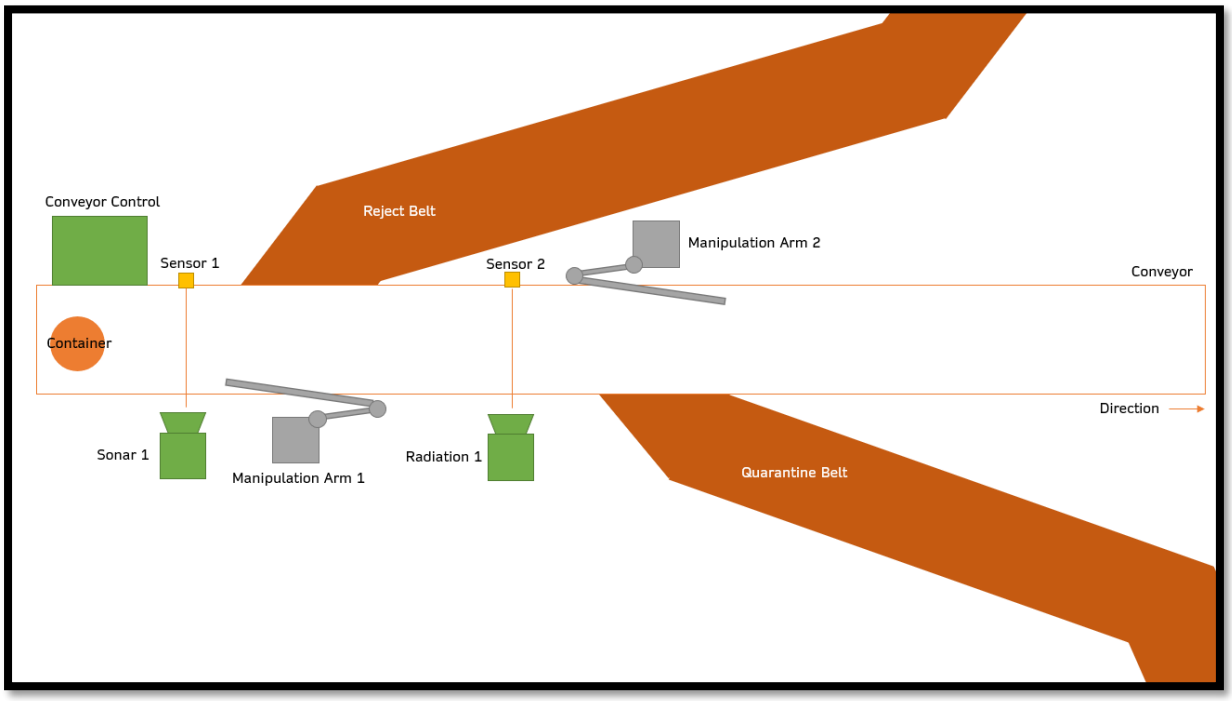
Any non-conforming containers should be sent to the reject belt.

A radiation sensor checks for potential leaks in the container.

Any container with a radiation value higher than 20 should be sent to quarantine.

Manipulation arms can be extended to divert the path of the containers to other belts.

Containers that pass both tests should be allowed to continue.



Task

Using pseudo code, describe a system for controlling the above process.

Feel free to include any thoughts, considerations or diagrams regarding your design or the system.

Refer to the diagram provided for component references.

Appendix 1

The controls on the component can invoke the following methods below.

Conveyor Control

start()

stop()

Sensor

detected() - returns 1 if object detected

Manipulation Arm

extend() - takes 5 seconds

retract() - takes 5 seconds

Sonar

examine() - takes 20 seconds to execute. Returns "DEFECT" or "OK"

Radiation

detect() - takes 20 seconds to execute. returns value 0-99