**Design and Implementation of an Autonomous Mobile Robot System for Item Retrieval**

Module Code: COM00052H  
Examination Number: [Your Examination Number Here]

# Design

This section describes the design of the autonomous mobile robot system, including justifications for design decisions and a high-level system diagram.

System Overview:  
[Describe the purpose and key components...]

Component Interaction:  
[Explain how components interact...]

Design Justification:  
[Explain the rationale behind design choices...]

High-Level System Diagram:  
[Insert diagram here]

# Implementation

This section details the implementation of the system, emphasizing the use of ROS concepts and includes a diagram showcasing the autonomy mechanism.

System Architecture:  
[Detail the overall architecture...]

FSM Implementation:  
[Explain the finite state machine...]

Autonomy Mechanism:  
[Include state diagram or flowchart...]

ROS Utilization:  
[Highlight ROS 2 features used...]

# Analysis

In this section, the experimental approach, results, and their interpretation are presented, utilizing figures and tables for data representation.

Experimental Setup:  
[Outline your methodology...]

Data Presentation:  
[Present your findings with tables, graphs...]

Interpretation:  
[Discuss what the results indicate...]

# Evaluation

This section includes a discussion on the strengths and weaknesses of the solution, its applicability in the real world, and potential improvements.

Strengths and Weaknesses:  
[Discuss what worked well and what didn’t...]

Real-world Applicability:  
[Reflect on the transferability to real scenarios...]

# Safety and Ethics

This section discusses the safety implications and ethical considerations of deploying autonomous robotic systems in real-world scenarios.

Safety Implications:  
[Discuss safety aspects...]

Ethical Considerations:  
[Reflect on the ethical implications...]

Solution-Specific Reflection:  
[Link these discussions to your solution...]