Module 9: Assignment

Introduction to Simulink

Submitted by:

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Problem Statement

You are an engineer working on a project that involves designing a control system for a complex mathematical calculation. Your task is to create a Simulink model to solve the following,
mathematical expression: 25+12 - {[(15 × 32) ÷ (2 × 5)] ÷ 75} * 20.

Task to be performed:

● Using Simulink, create a model to solve the mathematical expression. 25+12 - {[(15 × 32) ÷ (2 × 5)] ÷ 75} * 20
● Design a Simulink model that includes components for addition, subtraction, multiplication, and division to represent the mathematical expression.
● Create a sub-system within the Simulink model specifically for the calculation of the expression within the brackets {[(15 × 32) ÷ (2 × 5)] ÷ 75}.
● Add annotations to the Simulink model to describe the purpose and functionality of each component, including the sub-system.
● Simulate the Simulink model to calculate the result of the mathematical expression and verify its correctness.

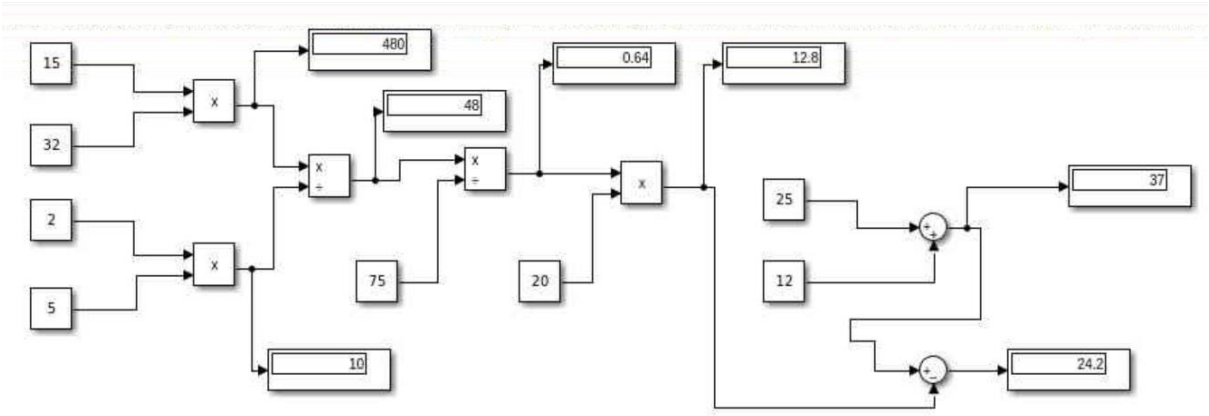
The Model created in Simulink for:

- **25+12 - {[(15 × 32) ÷ (2 × 5)] ÷ 75} *20**

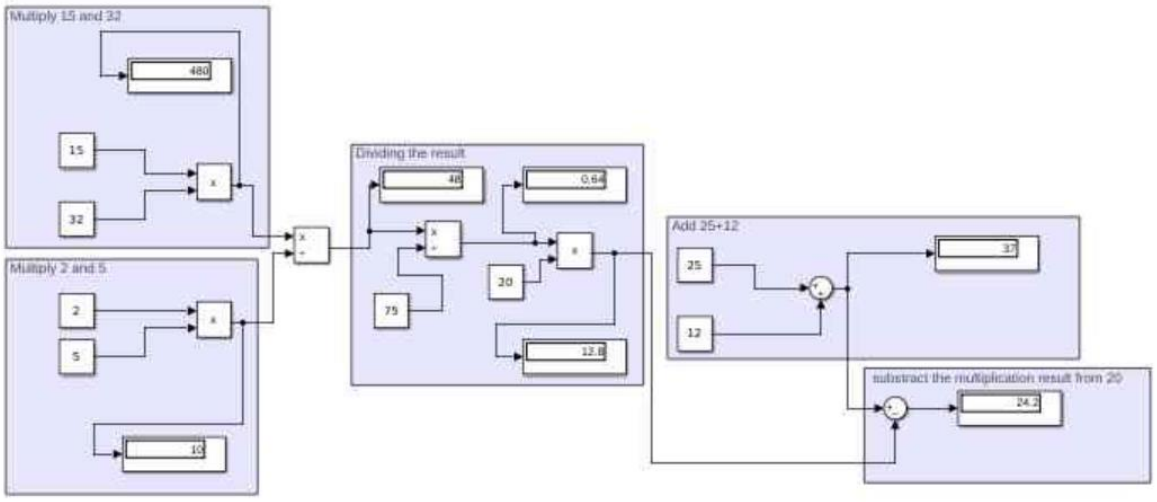
Step-by-Step Breakdown:

1. Compute 15×32
   15×32=480
2. Compute 2×5
   2×5=10
3. Divide the results from steps 1 and 2:
   {480}/{10} = 48
4. Divide the result by 75:
   {48}/{75}=0.64
5. Multiply the result by 20:
   0.64×20=12.8
6. Add 25+12:
   25+12=37
7. Subtract the multiplication result from step 5:
   37−12.8=24.2

Simulink Model:



With Annotations:



Result:

The output of this mathematical expression 25+12 - {[(15 × 32) ÷ (2 × 5)] ÷ 75} *20 model is 24.2