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Projectile Motion Calculator: Task and Implementation

Introduction

In this project, I developed a program to calculate key aspects of projectile motion, such as time of flight, maximum height, and range of the projectile. This calculator can be applied in various domains, including physics education and engineering, particularly in the field of robotics.

Implementation

The projectile motion calculator is based on the equations of motion for a projectile under the influence of gravity, at first the research about equations was carried out.

The program takes initial velocity and angle of projection as input and computes:

Time of Flight : The total time the projectile is in the air.

Maximum Height : The highest point the projectile reaches.

Range : The horizontal distance travelled by the projectile.

Uses in Robotics

Projectile motion is highly applicable in robotics, particularly for:

Trajectory Planning : Robots that need to launch objects or predict the path of moving objects use projectile motion to calculate the optimal angle and force required.

Robotic Arms : When manipulating objects, robotic arms can use these calculations to ensure the object reaches a desired location with precision.

Core Language and Tools

My core programming language is Python, which I used for this task due to its simplicity and robust libraries like `math`. Although I primarily use Python, I also researched and took assistance from AI to understand and perform the task efficiently.

Problems faced during development

Though this project was mean to be developed in c language and not in my core language (python), I had to use AI for my code development of projectile motion. I am supposed to make the c language as my core language also, I will take necessary actions further in my journey.

IR SENSOR ON GPB

Due to lack of experience in electronics and hardware, my IR sensor circuit encountered some error which I wasn’t able to solve and due to which I wasn’t able to perform my hardware task.

I am supposed to study about electronics and hardwares myself in my future journey for better knowledge.