

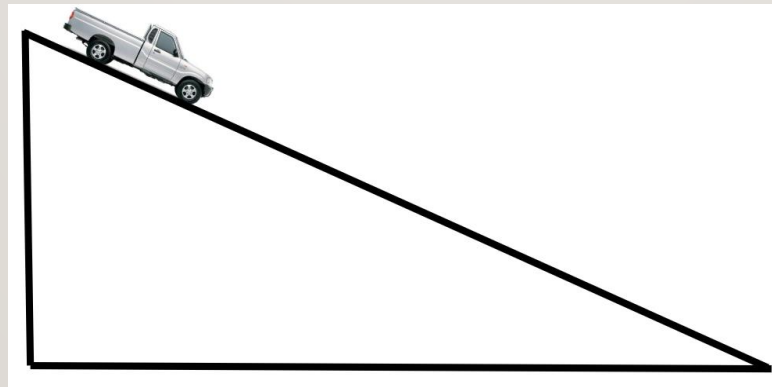
IOT PROJECT

ROLLER COASTER

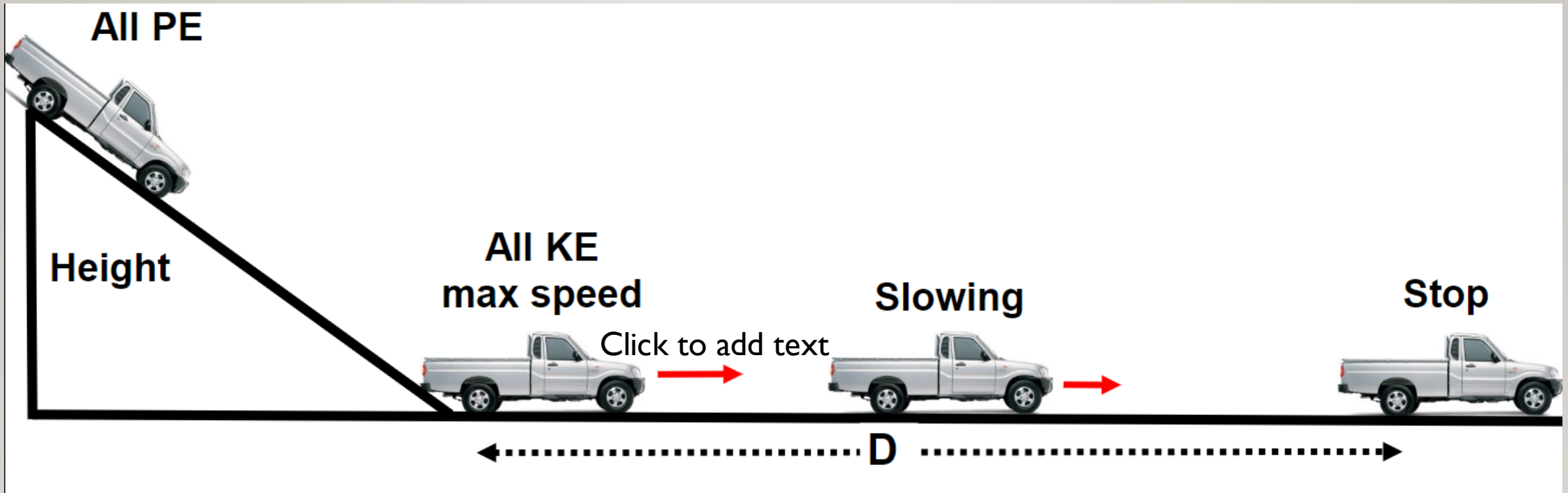


PROBLEM STATEMENT – CONSERVATION OF ENERGY

- In this experiment we will be proving conservation of energy theorem using roller coaster setup.
- Conservation of energy states that, when there is no external force on object then it's total mechanical energy ($KE + PE$) is conserved.
- We considered simple case which contains inclined plane and a car:

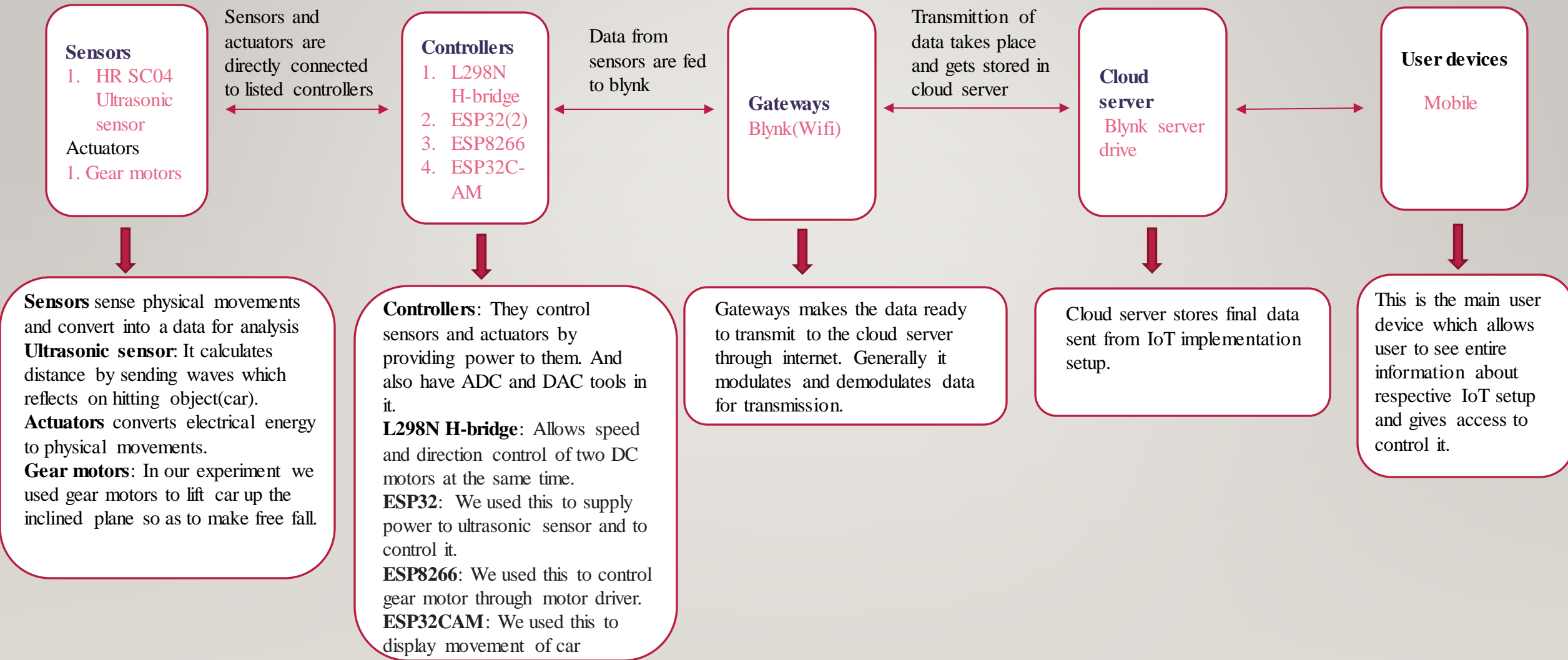


- If we release the car from top of the inclined plane, it starts moving freely downwards without any external force.
- At the top it has only potential energy stored in it and at the bottom most point it has only kinetic energy stored in it.

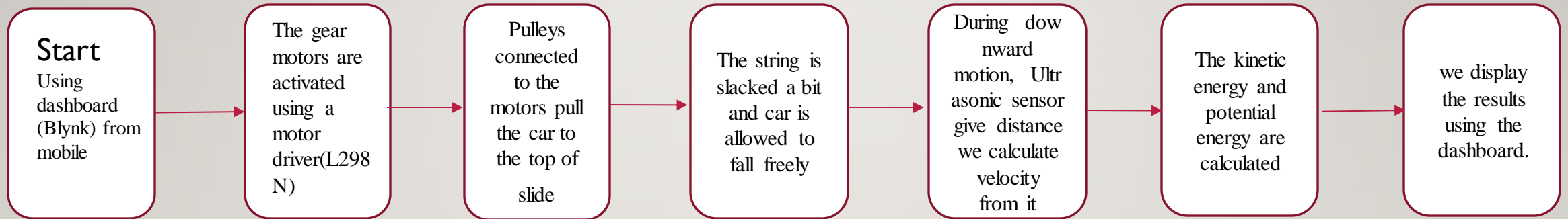


- At the top, total mechanical energy = $PE + 0 = mgH$
 - At the bottom, total mechanical energy = $0 + KE = \frac{1}{2}mv^2$
 - By conservation of energy theorem, total energy is conserved thus $\Delta PE = \Delta KE$, which implies $mgH = \frac{1}{2}mv^2$
- $v = \sqrt{2gH}$.

BLOCK DIAGRAM OF IOT BASED SETUP

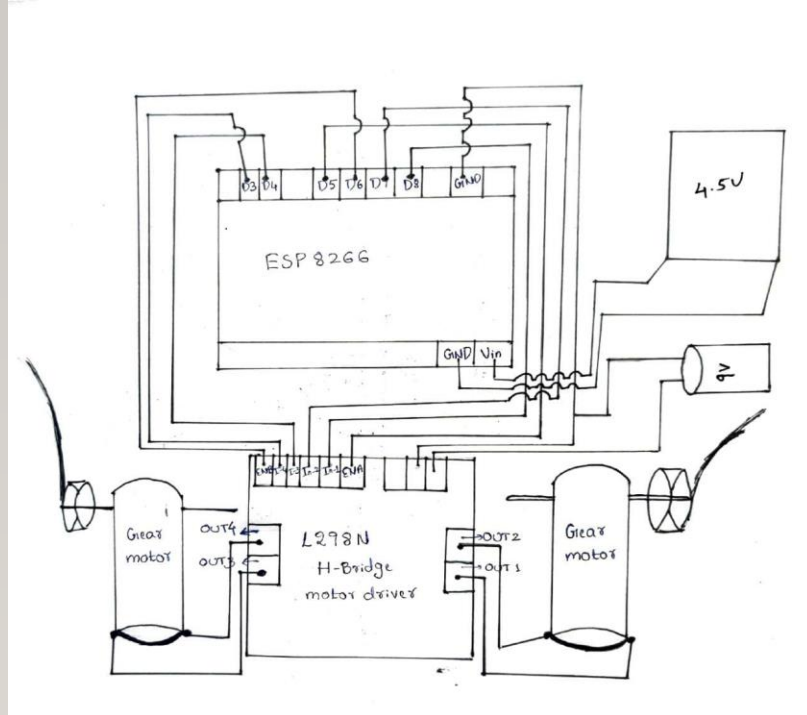


Flow of the project

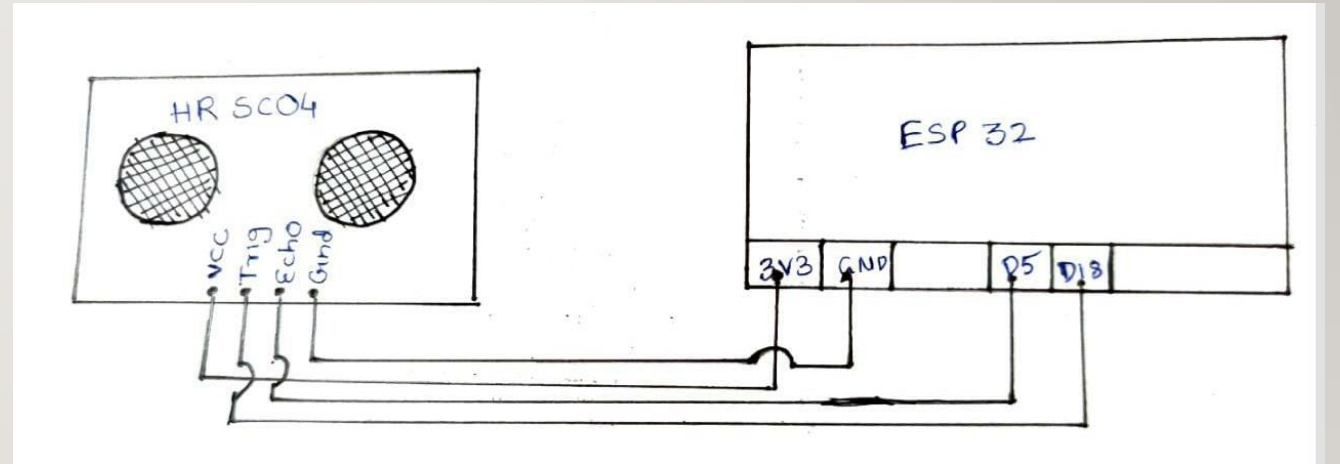


CIRCUIT DIAGRAM

Motors control setup to pull car upwards:

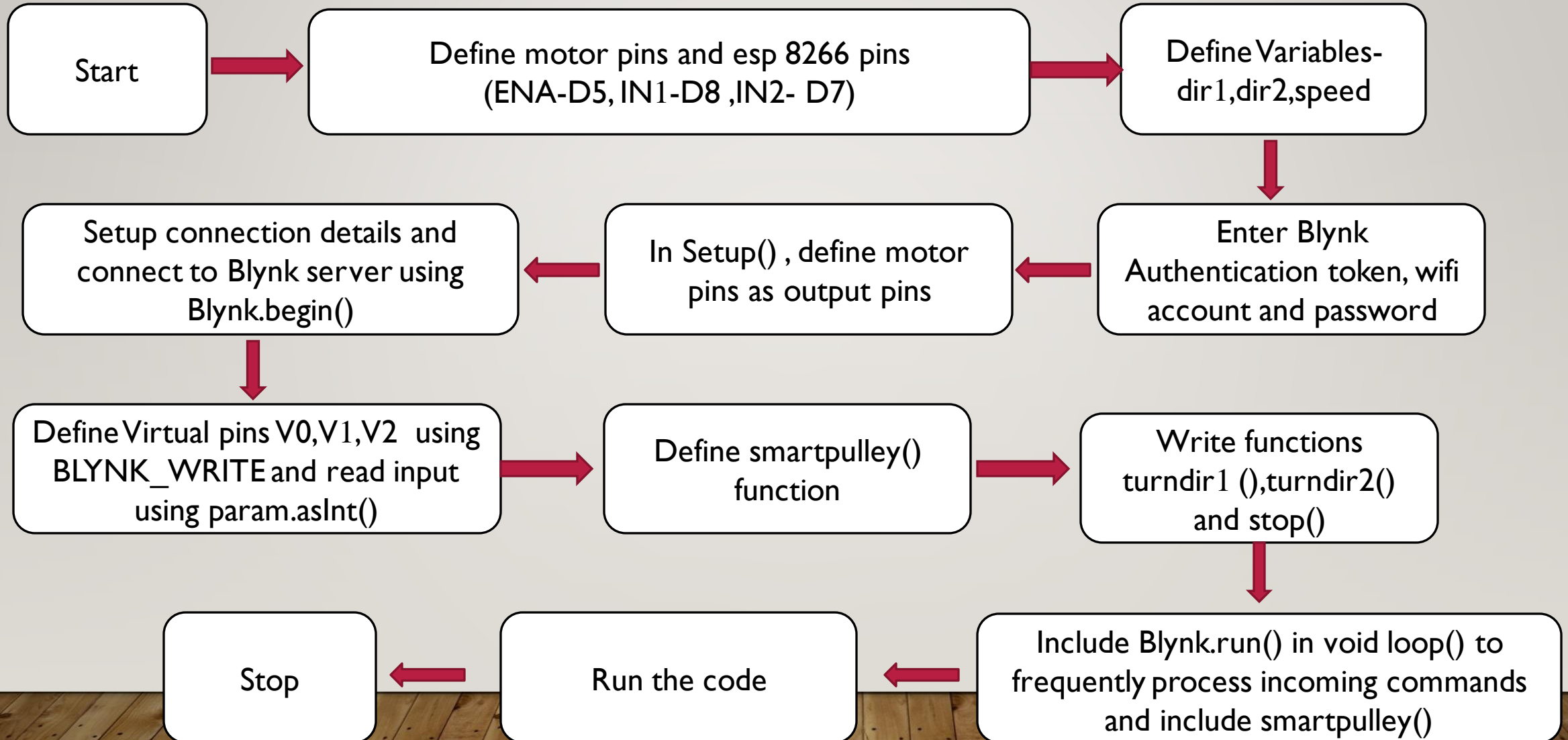


Ultrasonic sensor controlling:

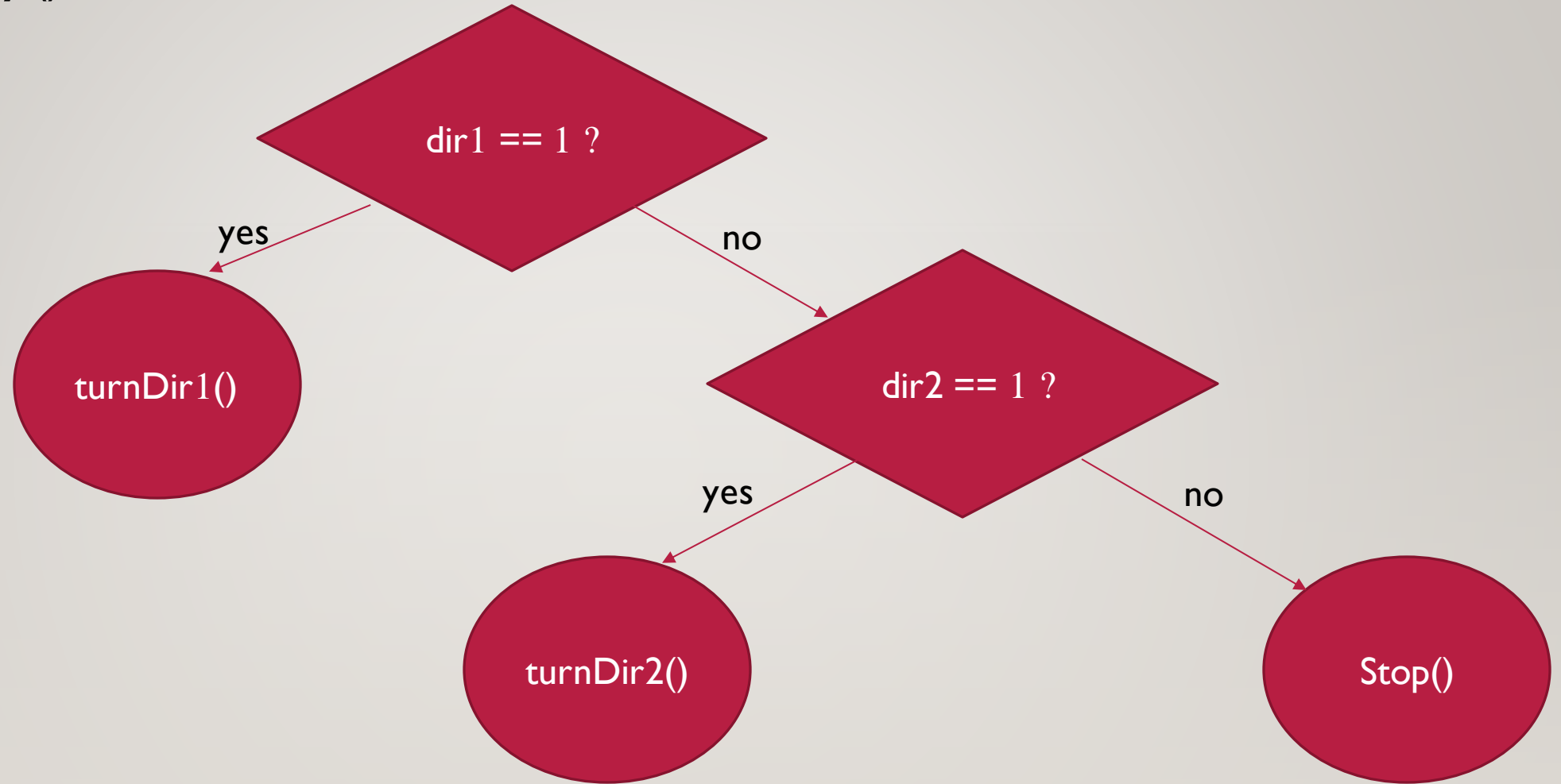


FLOW CHART OF THE CODE :

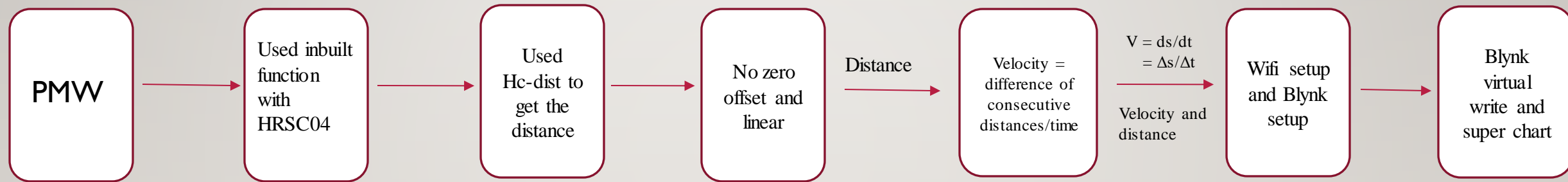
CONTROL MOTORS AND PULLEY SYSTEM



smartpulley()

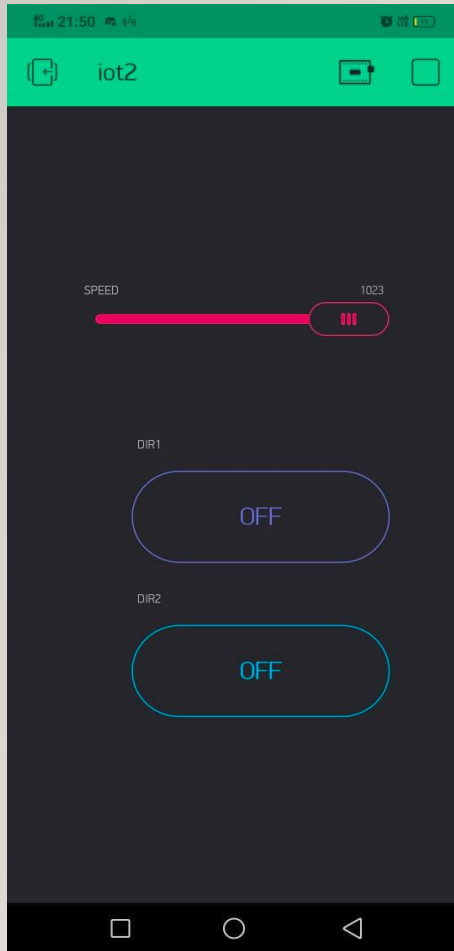


CODE FLOW FOR WORKING OF ULTRASONIC SENSOR

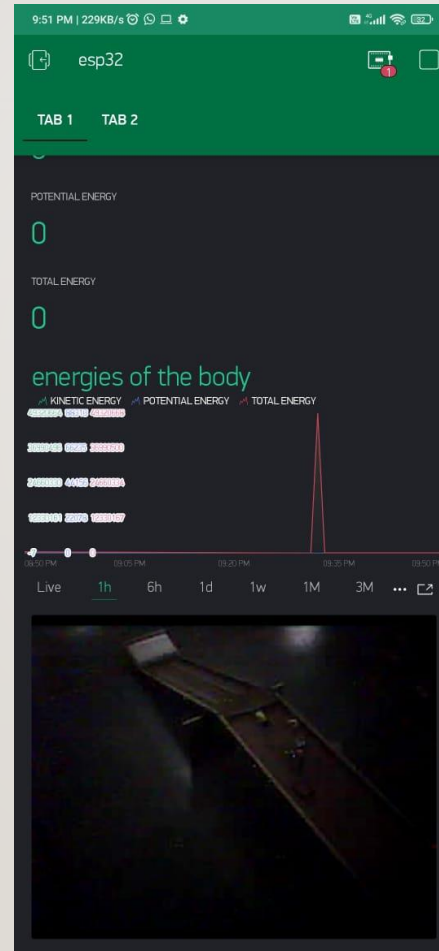


DASH BOARD: BLYNK

Dash board for
controlling motor



Dashboard for displaying
the conservation of energy



WORKING DEMO OF CONDUCTING AN ACTUAL EXPERIMENT REMOTELY

Working model:

- <https://youtu.be/Yt2xrZpzqRg>

Regarding the entire project:

- <https://youtu.be/t6si9M4tafw>