Question 1:

* = net social force acting on individual i
* =
  + driving/desired force, pushing individuals towards desired location/target
  + motivation and intended movement of pedestrian i
  + generally modeled as attractive force that pulls the pedestrian towards target, magnitude is influenced by how far the pedestrian's current velocity deviates from their desired velocity
  + A black background with white text

    AI-generated content may be incorrect.
  + repulsive force exerted by pedestrian j on pedestrian i
  + tendency of individuals to avoid collisions and maintain comfortable personal space
  + typically modeled as an exponentially decaying function of the distance between the two pedestrians.
    - As pedestrians get closer, the repulsive force increases rapidly. As they move further apart, the force quickly diminishes, eventually becoming negligible beyond a certain interaction range
  + A black background with white text

    AI-generated content may be incorrect.
* + force exerted by wall/obstacle on pedestrian i
  + obstacles preventing individuals from colliding, exerting repulsive force and preventing them from passing through environmental boundaries
  + simulate avoidance behavior, also exponentially decaying function of distance
    - closer = stronger repulsive force
  + A black background with white text

    AI-generated content may be incorrect.
* They are vector quantities because they must represent the magnitude AND direction that the interaction is acting
* Repulsion away, desire towards

Question 2:

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AI-generated content may be incorrect.

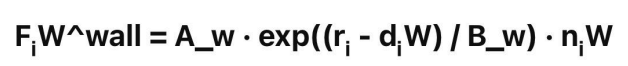
* Magnitude and direction of Fi^desire
  + Force vector:
* m/s
  + Magnitude:
* Since the force model is [140, 0], the entire force is in the positive x-direction -> along positive x-axis.

Question 3:



* Repulsive force vector
* Force changes:
  + As decreases (pedestrians get closer) the term will increase. will increase. will increase.
  + Magnitude increases exponentially as distance between pedestrians () decreases.

Question 4:



* Wall repulsion force:
* Importance of including wall forces?
  + It ensures that these agents will not be passing through environmental barriers like walls, boundaries, etc. Limits the simulation to prevent unrealistic results.
  + Aka just makes sure simulated pedestrians respect physical limitations of the environment.
  + Guide pedestrians along pathway - control pedestrian movement along specific channels and stay within navigable space.
  + Can help with lane formation?

Question 5:

A math equations and formulas

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* Acceleration:
* Update the velocity and position after one time step, current p=[0,0]
  + Idk rahhhhh