Movement Requirements

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1 Grounded Movement

Lateral Movement

- Move *left* or *right* relative to body orientation when movement input is pressed
- Accelerate relative to acceleration variable
- Limit top-speed to set amount
- On key release, apply friction to reduce speed

Sprinting

- When sprint input is held, increase top speed by sprint multiplier
- On release, don't apply sprint multiplier
- Sprinting is only allowed in parkour mode

Grounded orientation

- When *grounded*, match player orientation to surface below's normal vector
  - *Grounded* is a property that returns true when the player is within a height threshold above the ground

Grounded height above ground

- When grounded, set height above ground to certain amount

2 Player State

Parkour mode

- Player is quadrupedal
- Increased movement speed

Combat mode

- Player is bipedal

- Reduced movement speed

- Other functionality will be added, but it is irrelevant at the time

3 Jumping

- On jump key press, grounded is false

- On jump key press, impulse force is added to player movement in direction of cursor

- If cursor direction is between 180° and 360° relative to the player body, no jump is performed

- Jumping can only be performed in *Parkour mode*

  - If in combat mode, switch to parkour mode then perform jump

4 Airborne Movement

Landing prediction

- When in air, use projectile motion physics to predict landing spot

- With known landing spot, rotate player body to match surface normal of landing spot

Forces applied

- Movement mechanic will be added during combat

- Must allow for forces to be applied to player while airborne

5 Animations

Body orientation

- Orient body based on horizontal directional input

Head orientation

- Orient head toward cursor

- Once head breaks the vertical plane relative to the player up direction, vertically mirror it, so that the head doesn't perform unnatural rotations