

# Trash Dash Gameplay Test Cases

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<b>Test Case [TC_00]: Start Run</b>
When the player starts a run, player character, background objects, and objects part of the play area in front of the player should be rendered. A timer should count down before objects start moving to give the player time to react. The music should change. The background and play area should continue to be populated as the player moves past existing objects.
<i>Preconditions:</i> <ul style="list-style-type: none"><li>○ Player is at Main Menu</li></ul>
<i>Assumptions:</i> Game is being run on a compatible device.
<i>Steps:</i> <ol style="list-style-type: none"><li>1. Tap Run.</li><li>2. Collect currency and lose all lives.</li><li>3. Return to Main Menu and start another Run.</li></ol>
<i>Expected Results:</i> <ul style="list-style-type: none"><li>○ A timer appears and counts down from 4, playing a sound effect each tick.</li><li>○ When the timer reaches 0, the player character starts moving forward and the player has control of the character.</li><li>○ A different track than the Main Menu music plays.</li><li>○ Distance, score, and in-run currency counts start at 0.</li><li>○ As objects move past the character, they move out of sight.</li><li>○ More objects appear over the horizon as the character moves forward.</li><li>○ New run has distance, score, and in-run currency counts reset to 0.</li></ul>

**Test Case [TC\_01]: Character Jump Avoid**

When the player swipes upwards, the character should jump and not collide with anything below their model during the jump.

**Preconditions:**

- Run has started.
- Game is not paused.
- Character is not already jumping or stunned from collision.
- Character is not invincible.

**Assumptions:** Game is being run on a compatible device with touch input capability.

**Steps:**

1. Wait for an instance of any short or low object (e.g. rats, fishbones, etc)
2. If needed, navigate into the same lane as the instance, before it reaches the character model's z-coordinate.
3. At some distance before collision, swipe up on the screen.

**Expected Results:**

- Character jumping sound effect plays briefly.
- Character collision mesh is raised above the ground briefly.
- Character jumping animation plays for the duration that the character is in the air and ends when the character lands on the ground, returning to its running animation.
- If an object instance passes below the character model without clipping while they are midair, then no collision event should not happen.
- The player should not be able to jump again while in midair.

**Note:**

The player can slide while jumping and vice-versa, interrupting either event. It is unknown if this is a bug or a feature.

**Test Case [TC\_02]: Character Slide Avoid**

When the player swipes downward, the character should slide and not collide with anything above their model during the slide.

**Preconditions:**

- Run has started.
- Game is not paused.
- Character is not already sliding or stunned from collision.
- Character is not invincible.

**Assumptions:** Game is being run on a compatible device with touch input capability.

**Steps:**

1. Wait for an instance of any high object (e.g. high wide fence)
2. If needed, navigate into the same lane as the instance, before it reaches the character model's z-coordinate.
3. At some distance before collision, swipe down on the screen.

**Expected Results:**

- Character sliding sound effect plays briefly.
- Character collision mesh is transformed be lower, toward the ground, briefly.
- Character sliding animation plays for the duration that the character is lower and ends when the character gets up, returning to its running animation.
- If the object instance passes above the character model without clipping while they are sliding, then no collision event should not happen.
- The player should not be able to slide again while already sliding.

**Note:**

The player can slide while jumping and vice-versa, interrupting either event. It is unknown if this is a bug or a feature.

**Test Case [TC\_03]: Character Change Lanes**

When the player swipes left or right, the character should move to the next lane accordingly, colliding with things in that lane and not colliding with anything not in that lane.

**Preconditions:**

- Run has started.
- Game is not paused.
- Character is not stunned from collision.
- Character is not invincible.

**Assumptions:** Game is being run on a compatible device with touch input capability.

**Steps:**

1. Start in the centre lane, wait one second.
2. Swipe left twice, wait one second.
3. Swipe right thrice, wait one second.
4. Swipe left once.

**Expected Results:**

- Character model moves from the centre lane to the left lane, then the second left swipe does nothing.
- Character model moves from the left lane to the centre lane, then from the centre lane to the right lane, then the third right swipe does nothing.
- Character returns to the centre lane from the right.
- Object instances that reach the character's z-coordinate, if in the same lane as the character, collide with the character; if the character is in the middle of changing lanes, then instances in either the next or previous lanes collide with the character.
- Object instances that reach the character's z-coordinate while the character is outside their lanes, do not collide with the character.

**Test Case [TC\_04]: Character Accelerates**

While the player is running without colliding with anything harmful, the character speed should accelerate and the combo multiplier should increase.

***Preconditions:***

- Game is not paused.
- Character is not stunned or already at max speed.

***Assumptions:*** Game is being run on a compatible device.

***Steps:***

1. Start at minimum speed, either by starting a new run or after recovering from a collision stun.
2. Do not collide with anything harmful, either from invincibility or playing as normal, for a period of time until score multiplier reaches x5.

***Expected Results:***

- Character forward velocity increases with constant acceleration.
- Animations, jumps, and slides linearly speed up.
- Score and distance increment faster.
- Score multiplier progresses from x1 through to x5.
- At x5, the character is at max speed and everything stops accelerating.

**Test Case [TC\_05]: Obstacle Collision**

When the player collides with an instance of a hurtful object: collision animations and sound should play, the player should lose a heart, speed and combo multiplier should reset, and, if the player still has more hearts, gameplay should continue from the point of collision.

**Preconditions:**

- Run has started.
- Player has more than 1 heart.
- Player is not invincible.
- Game is not paused.

**Assumptions:** Game is being run on a compatible device.

**Steps:**

1. Wait for an obstacle to appear on screen (any of: rat, garbage container, narrow double fence, wide high fence, wide low fence).
2. If needed, navigate into the same lane as the obstacle, either before or while the obstacle model's z-coordinate overlaps with the character model's z.
3. Wait until the obstacle's collision mesh overlaps the character's.

**Expected Results:**

- Collision sound plays once, briefly.
- Collision particle effects play briefly.
- Character model plays its collision animation briefly, then returns to its running animation.
- Character stops briefly, then continues forward, at minimum speed, from the point of collision.
- For a brief period, when the character starts moving forward again, the character is invincible and ignores all harmful collisions.
- Player control is suspended for the duration of collision, then re-enabled once the character starts moving forward again.
- One heart from the life display darkens / disappears.
- Score multiplier changes back to x1.

**Test Case [TC\_06]: Currency Collection**

When the player collides with an instance of a currency object: the appropriate sound and visual effects should play, the collected instance should disappear, and the appropriate counter should increment.

***Preconditions:***

- Run has started.
- Game is not paused.
- Magnet powerup is not active.

***Assumptions:*** Game is being run on a compatible device.

***Steps:***

1. Wait for an instance of a currency object to appear on screen (either fishbone or golden sardine tin).
2. If needed, navigate into the same lane as the instance, either before or while its model's z-coordinate overlaps with the character model's z.
3. Wait until the instance's collision mesh overlaps the character's.

***Expected Results:***

- Collection sound plays once, briefly.
- Collection particle effects play briefly.
- The collected instance is removed from the play area.
- The appropriate counter increments by 1; if a fishbone was collected, then the counter beside the fishbone on the UI should update; similarly with the golden sardine tin and its counter.

**Test Case [TC\_07]: Powerup Collection**

When the player collides with an instance of a powerup object: the appropriate sound and visual effects should play, the collected instance should disappear from the play area, and the appropriate powerup should activate or, if it's already active, its duration should refresh.

***Preconditions:***

- Run has started.
- Game is not paused.

***Assumptions:*** Game is being run on a compatible device.

***Steps:***

1. Wait for a powerup object to come up on screen (either x2, a magnet, or a star).
2. If needed, navigate into the same lane as the instance, either before or while its model's z-coordinate overlaps with the character model's z.
3. Wait until the instance's collision mesh overlaps the character's.

***Expected Results:***

- Collection sound plays once, briefly.
- Collection particle effects play briefly.
- The powerup's effects activate.
- An icon displaying the powerup and a duration bar appears if not active; otherwise, if the powerup was already active, then the duration bar resets to full.



**Test Case [TC\_08]:** Stored Powerup Activation (Invincibility / Magnet / x2)

When the player taps on the stored powerup, the stored item should be consumed and the appropriate powerup should activate or, if it's already active, its duration should refresh.

**Preconditions:**

- Player has at least 2 of each powerup stored (invincibility, magnet, and x2)

**Assumptions:** Game is being run on a compatible device.

**Steps:**

For each powerup type (invincibility, magnet, x2)

1. Equip the stored powerup in the Main Menu.
2. Start a new run.
3. Return to Main Menu.
4. Equip the stored powerup again.
5. Start another run.
6. Tap on your stored powerup.
7. Play until the powerup runs out.
8. Return to Main Menu.
9. Equip another of the same powerup
10. Start another run.
11. Collect a powerup matching the one you have equipped.
12. Before the powerup runs out, tap on your stored powerup.
13. Return to Main Menu.

**Expected Results:**

- On return to Main Menu after the first run, the number of powerups stored remains the same.
- On activation during second and third runs, stored powerup icon disappears.
- On return to Main Menu after second and third runs, how many are stored of that powerup type is 1 less than before the run.
- On activation during the second run, powerup duration is refreshed, behaves as expected, and ends after the expected duration.
- On activation during the third run, powerup duration is reset to full, behaves as expected, and ends after the expected duration.

**Test Case [TC\_09]: Stored Powerup Activation (Heart)**

When the player taps on the stored powerup, the stored item should be consumed and the appropriate powerup should activate or, if it's already active, its duration should refresh.

**Preconditions:**

- Player has at least 2 heart powerups stored.

**Assumptions:** Game is being run on a compatible device.

**Steps:**

1. Equip the heart in the Main Menu.
2. Start a new run.
3. Before losing any lives, tap on the stored heart.
4. Return to Main Menu.
5. Equip the heart again.
6. Start another run.
7. Before losing any lives, tap on the stored heart.
8. Collide with a harmful object and lose a life.
9. Tap on the stored heart.
10. Return to Main Menu.
11. Start another run.
12. Collide with a harmful object and lose a life.
13. Tap on the stored heart.
14. Return to Main Menu.

**Expected Results:**

- On return to Main Menu after the first run, the number of hearts stored remains the same.
- On tapping the heart while at full lives, lives stays at max and stored heart does not disappear.
- On tapping the heart while not at full lives, stored heart icon disappears and one life is restored.
- On return to Main Menu after the second and third runs, you have one less heart stored compared to before the runs.

**Test Case [TC\_10]: Invincibility Powerup**

When the player activates invincibility, the corresponding audio and visual effects should play and the character should ignore all harmful collisions for the duration of the powerup.

**Preconditions:**

- Run has started.
- Game is not paused.

**Assumptions:** Game is being run on a compatible device.

**Steps:**

1. Either activate a stored Invincibility Powerup or collect it from a lane.
2. While the powerup is active, collide into as many rats, garbage bins, fences, pylons as you can.
3. After the powerup ends (its duration bar depletes and the icon disappears) collide into any harmful object.

**Expected Results:**

- On activation, the powerup icon appears with a full duration bar.
- Powerup audio plays for the duration of the powerup.
- Powerup visual effects play for the duration of the powerup.
- Character is not stunned, does not take damage, does not lose speed, nor does the score multiplier reset when colliding with rats, garbage bins, fences, and pylons (harmful objects).
- Icon disappears when the duration bar is empty.
- Player takes damage colliding into harmful objects after the powerup ends.

**Test Case [TC\_11]: Magnet Powerup**

When the player activates the magnet, the corresponding audio and visual effects should play and all nearby currency items should be drawn to the character.

**Preconditions:**

- Run has started.
- Game is not paused.

**Assumptions:** Game is being run on a compatible device.

**Steps:**

1. Either activate a stored Magnet Powerup or collect it from a lane.
2. While the powerup is active, avoid as many currency items as you can.
3. After the powerup ends (its duration bar depletes and the icon disappears) avoid any currency object.

**Expected Results:**

- On activation, the powerup icon appears with a full duration bar.
- Powerup audio plays for the duration of the powerup.
- Powerup visual effects play for the duration of the powerup.
- Currency pickups in all lanes are drawn to the player and collected once they are close enough to the player's z-coordinate.
- Icon disappears when the duration bar is empty.
- After powerup ends, currency pickups are no longer drawn to the player and player only collects those that they collide with in the same lane.

**Test Case [TC\_12]: x2 Powerup**

When the player activates the x2 powerup, the corresponding audio and visual effects should play and the score multiplier should be doubled.

**Preconditions:**

- Run has started.
- Game is not paused.
- Player has more than 1 life remaining.

**Assumptions:** Game is being run on a compatible device.

**Steps:**

1. Either activate a stored x2 Powerup or collect it from a lane.
2. While the powerup is active, avoid obstacles and build up as much speed / score multiplier as possible.
3. Before the powerup ends, collide with a harmful object to reset your score multiplier.
4. Play until the x2 powerup ends.

**Expected Results:**

- On activation, the powerup icon appears with a full duration bar.
- Powerup audio plays for the duration of the powerup.
- Powerup visual effects play for the duration of the powerup.
- Score multiplier updates to double what it was before.
- While the player is not yet at max speed, score multiplier should increase in increments of 2 instead of 1, from a minimum of x2 to a maximum of x10.
- When player crashes and resets their score multiplier, it should be reset to x2.
- Icon disappears when the duration bar is empty.
- After powerup ends, the score multiplier is halved, and increments by 1 in its usual range of x1-x5.

**Test Case [TC\_13]: Player Pauses and Resumes**

When the player taps on the pause button, the game should stop, then when they tap "Resume", the game should continue from where they paused.

***Preconditions:***

- Run has started.
- Game is not already paused.

***Assumptions:*** Game is being run on a compatible device.

***Steps:***

1. Tap on the pause button.
2. Wait.
3. Tap on the resume button.
4. Resume play as normal.

***Expected Results:***

- All sound effects pause.
- All animations and visual effects pause.
- Powerup durations pause.
- Score and distance counts pause.
- Character movement pauses.
- Character control input is suspended.
- On resume, everything paused resumes from the state they were in when paused.
- Player resumes control of character.

**Test Case [TC\_14]: Player Pauses and Returns to Main Menu**

When the player taps on the pause button, the game should stop, then when they tap "Main Menu", the game should end the run and return to the Main Menu.

*Preconditions:*

*Assumptions:* Game is being run on a compatible device.

*Steps:*

1. Check current fishbone and golden sardine tin amounts in the shop.
2. Start a new run.
3. Collect fishbones and at least one golden sardine tin.
4. Tap on the pause button.
5. Wait.
6. Tap on the main menu button.
7. Check new fishbone and golden sardine tin amounts in the shop.

*Expected Results:*

- All sound effects pause.
- All animations and visual effects pause.
- Powerup durations pause.
- Score and distance counts pause.
- Character movement pauses.
- Character control input is suspended.
- On return to Main Menu, total fishbones and golden sardine tins have been incremented by the amounts collected in the run.

**Test Case [TC\_15]: Player Loses All Lives (Extra Chance)**

When the player runs out of lives for the first time in a run, a prompt should appear giving the option to continue at some currency cost.

***Preconditions:***

- Run has started.
- Game is not paused.
- Character is not invincible.
- Player has not already run out of lives once in the run.

***Assumptions:*** Game is being run on a compatible device.

***Steps:***

4. Collide into enough harmful objects to lose all lives.
5. Avoid invincibility powerups.

***Expected Results:***

- Run is paused.
- All hearts are darkened.
- Prompt appears asking if the player would like to “Get another chance?”.
- 2 buttons are displayed, one to continue, the other to trigger Game Over.
- Currency balance is displayed.
- Cost to continue is displayed on the continue button.
- Continue button is not selectable if player cannot afford cost.
- Play area behind prompt is darkened.



**Test Case [TC\_16]: Player Loses All Lives (No Chances, Game Over)**

When the player runs out of lives after using their extra chance, that's Game Over. High scores should be displayed and the player should have the option to start a new run or return to the Main Menu.

***Preconditions:***

- Run has started.
- Game is not paused.
- Character is not invincible.
- Player has already lost all lives once and used their extra chance.

***Assumptions:*** Game is being run on a compatible device.

***Steps:***

1. Collide into enough harmful objects to lose all lives.
2. Avoid invincibility powerups.

***Expected Results:***

- Run is paused.
- All hearts are darkened.
- Game Over screen is displayed.
- Play area behind Game Over is darkened.
- High scores are displayed and the current run's score is highlighted.
- Buttons are displayed to:
  - Return to the Main Menu
  - View the Leaderboards
  - View Missions
  - Start a new run
  - Go directly to the shop

**Test Case [TC\_17]: Extra Chance**

When the player has run out of lives for the first time in a run and they choose to continue, the player's currency balance should be updated and they should continue on from the same point with another life.

***Preconditions:***

- Run has started.
- Game is paused on the "Get another chance?" prompt.
- Player has enough currency to afford the continue cost.
- The player has not already lost all their lives and used up their extra chance.

***Assumptions:*** Game is being run on a compatible device.

***Steps:***

1. Tap on the continuation button.
2. Collide with harmful objects, losing all lives and triggering Game Over screen.
3. Navigate to the Store and check currency balances.

***Expected Results:***

- 1 Life is restored.
- Timer counts down from 4 before giving character control to the player and the character starts moving forward from the same point where they died.
- Character is briefly invulnerable when they start moving and do not trigger harmful collisions.
- After the invulnerability period is over, harmful collisions trigger as normal.
- When the player loses all lives again, display the Game Over screen.
- Currency is incremented by whatever was earned in the run, less the cost of the continuation.

**Test Case [TC\_18]: Decline Extra Chance**

When the player has run out of lives for the first time in a run and they do not choose to continue, the Game Over screen should be displayed and the player's currency balance should be incremented as normal by whatever they earned in the run.

***Preconditions:***

- Run has started.
- Game is paused on the "Get another chance?" prompt.
- The player has not already lost all their lives and used up their extra chance.

***Assumptions:*** Game is being run on a compatible device.

***Steps:***

1. Tap on the Game Over button.
2. Navigate to the Store and check currency balances.

***Expected Results:***

- Display the Game Over screen as in TC\_16.
- Player cannot continue the run anymore.
- Currency is incremented by whatever was earned in the run.