

Assignment Coversheet


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Assignment & Course Details:

Subject Code: (e.g. XCAT1234) XBGD10033N		Subject Name (e.g. Fundamentals of Computing): Fundamentals of Game Technology	
Course (e.g. Bachelor in Computing) : Bachelor of Game Development (Hons)			
Lecturer Name: Yap Chin Kein			
Assessment Due Date: (dd/mm/yy)	9/12/22	Assessment Title:	Platformer Game

I/We declare that:

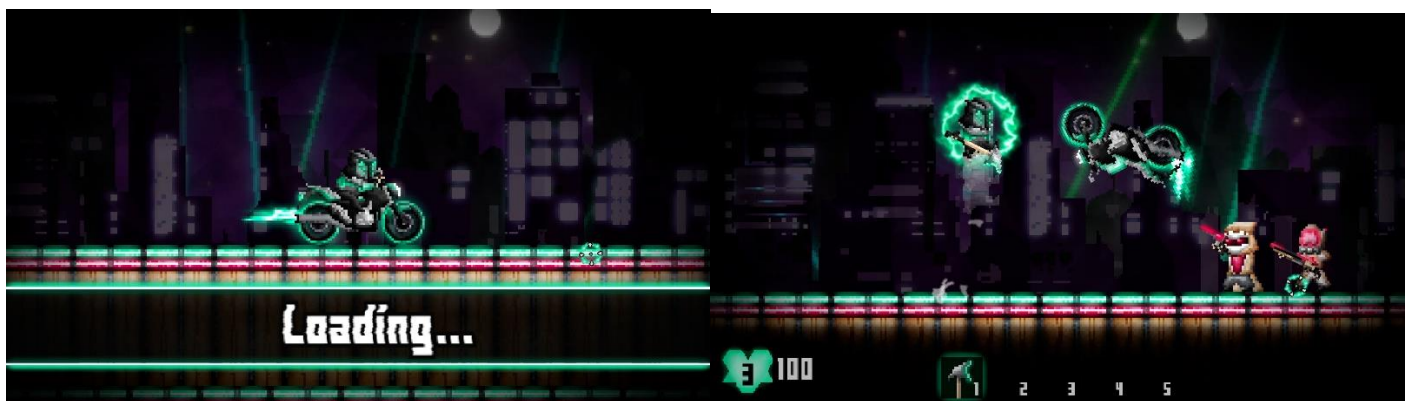
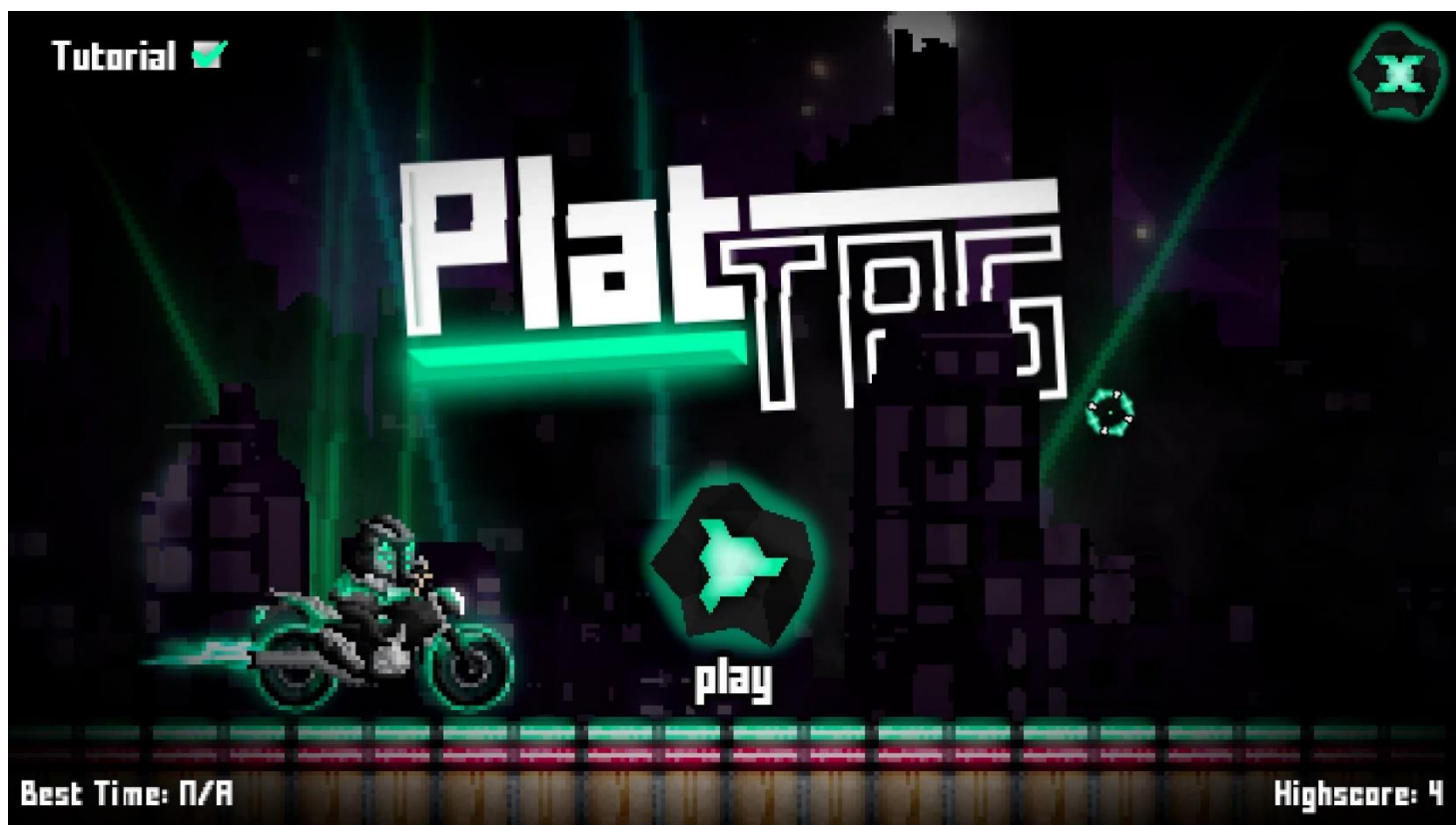
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 - This assignment or parts of it has not previously been submitted for assessment in this or any other subject.
 - I/We allow the assessor of this assignment to test any work submitted by me/us, using text comparison software for plagiarism.
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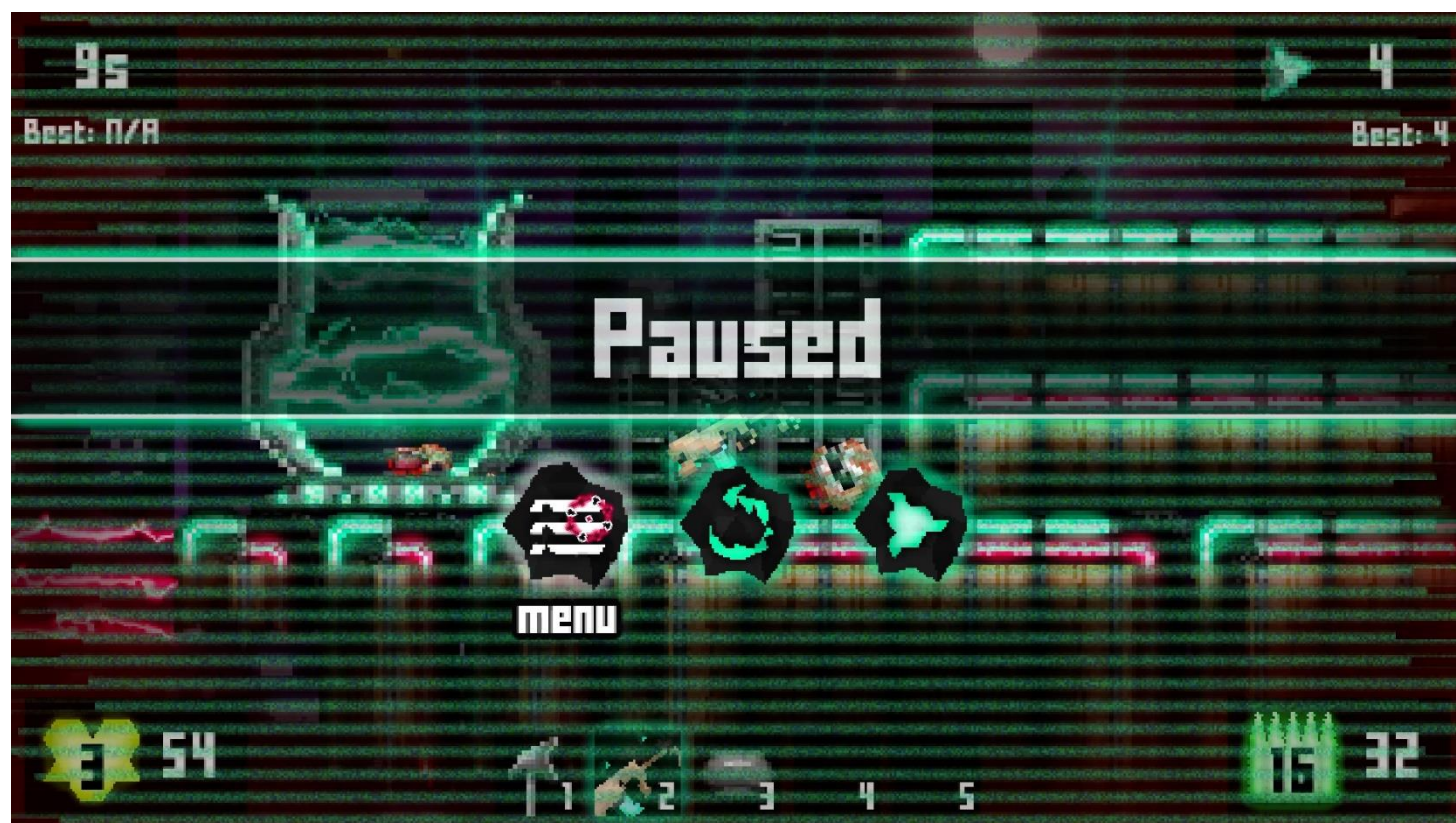
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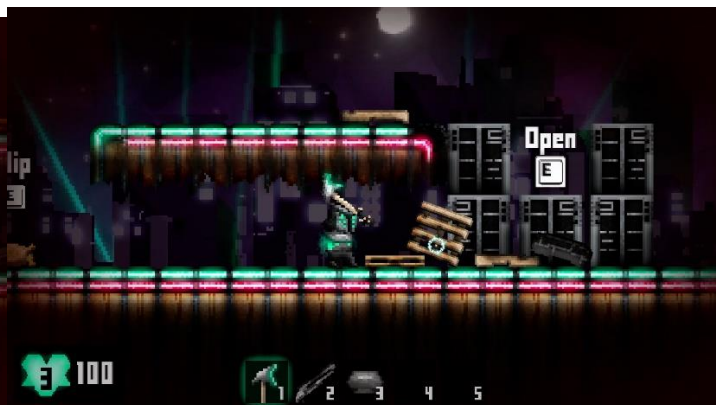
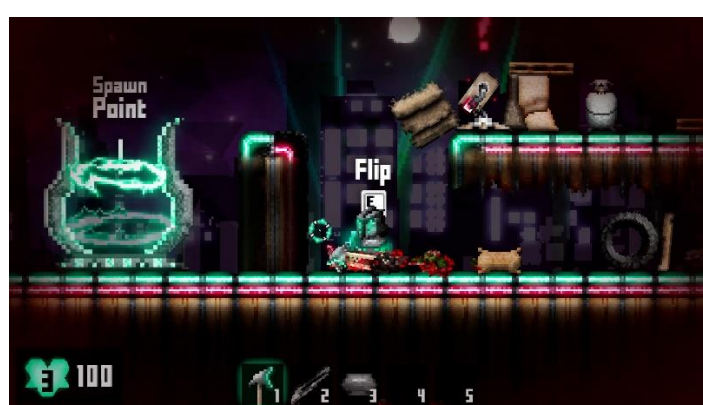
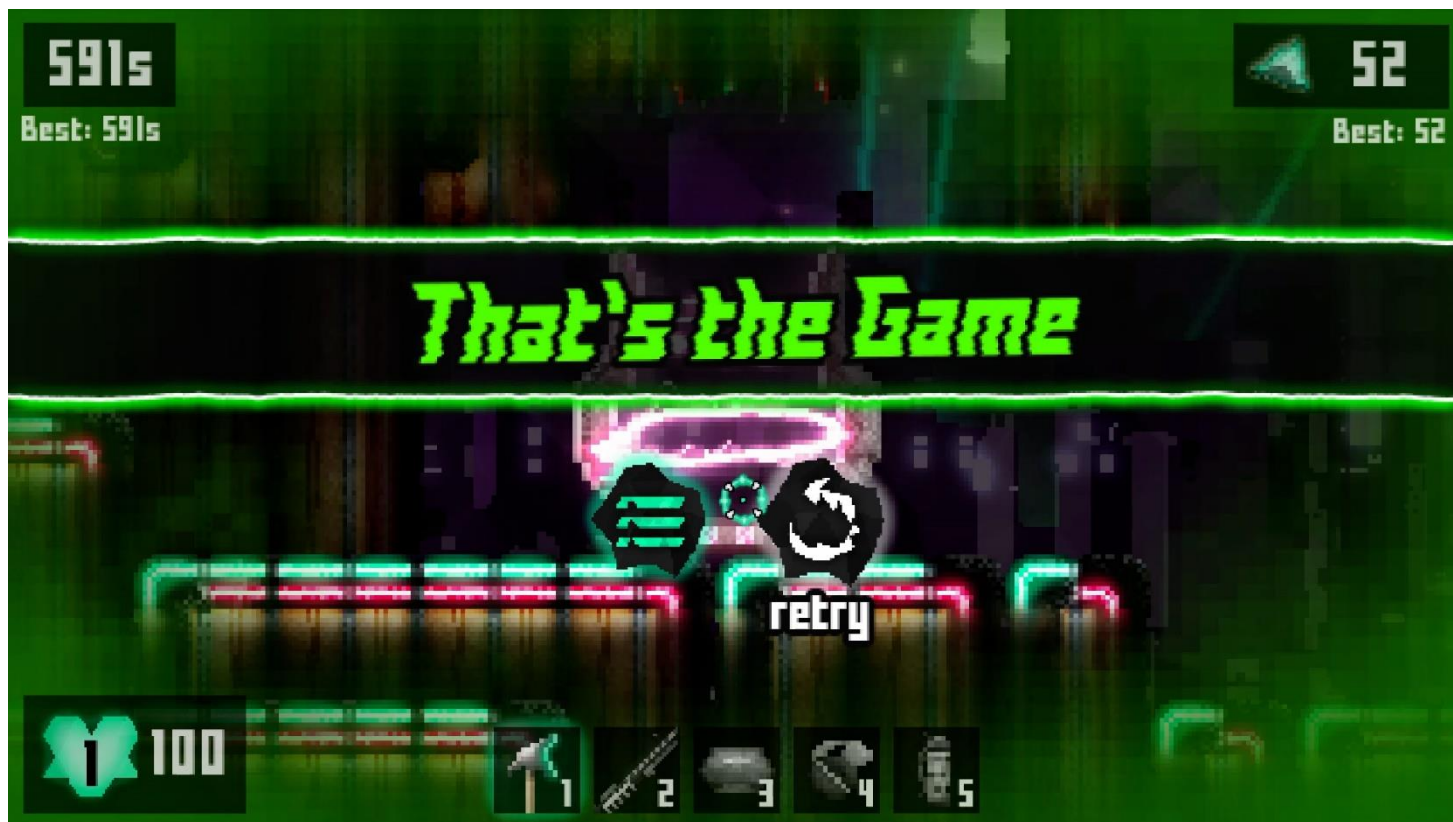
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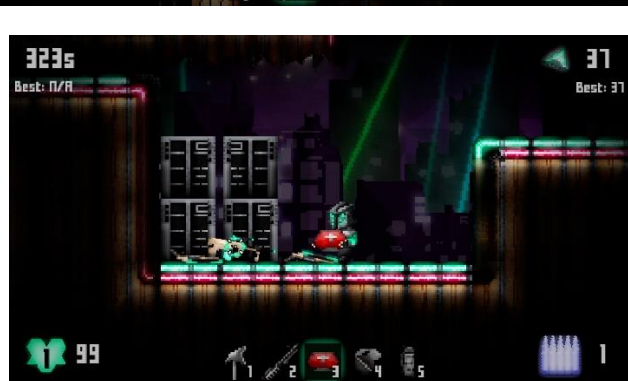
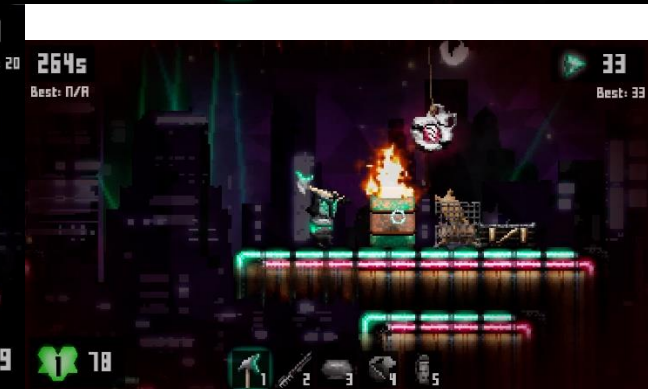
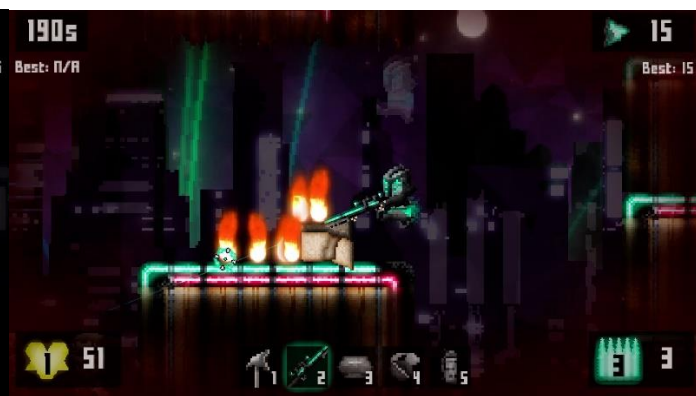
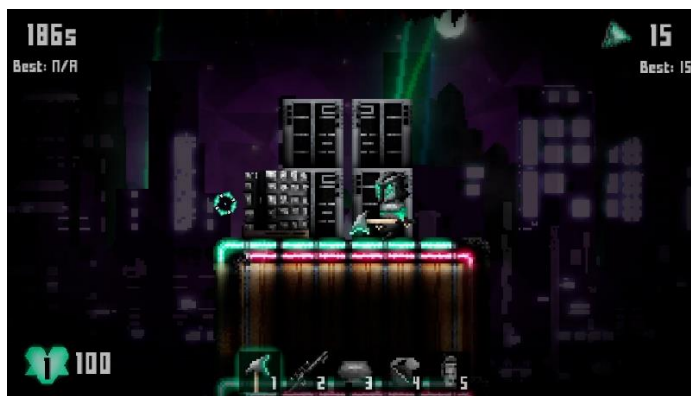


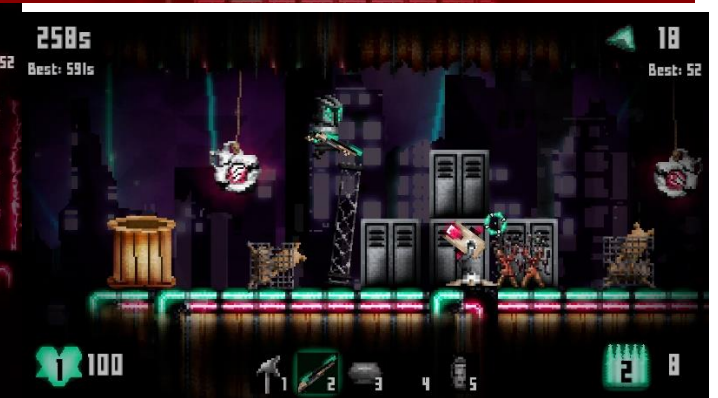
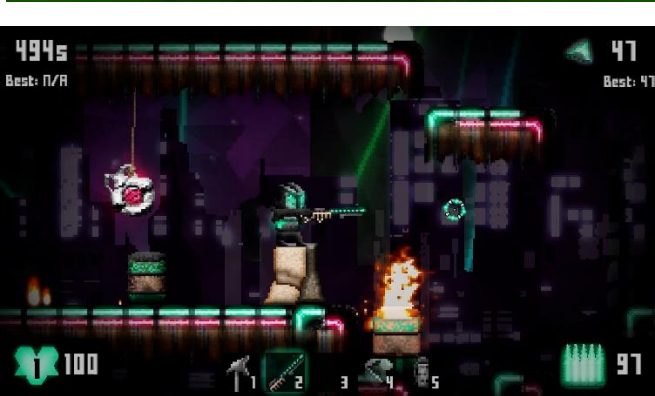
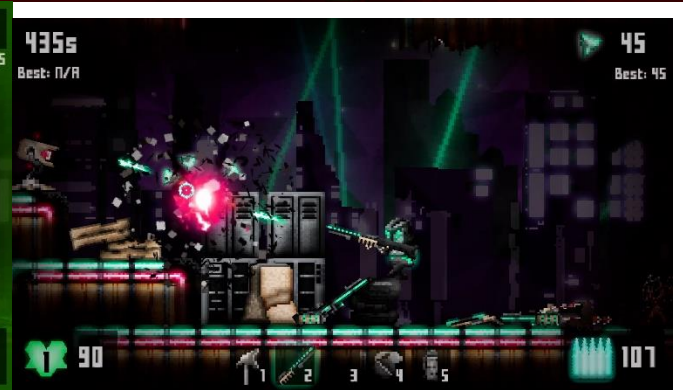
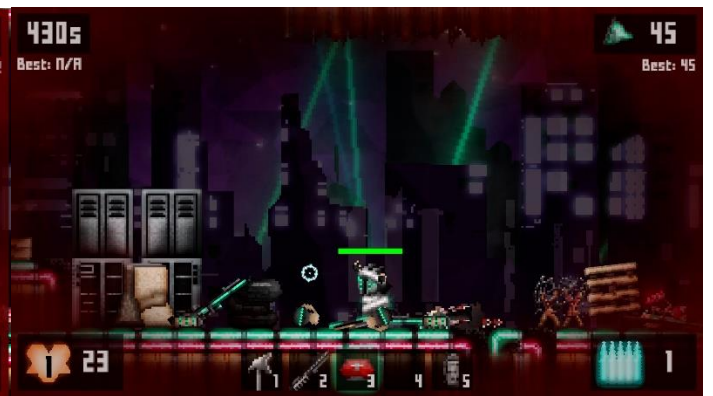
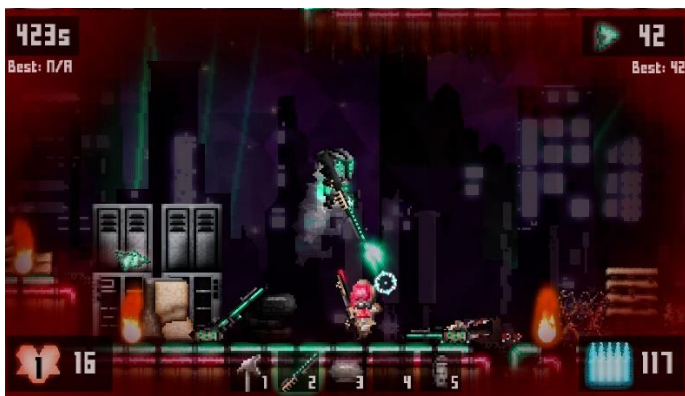
Screenshots

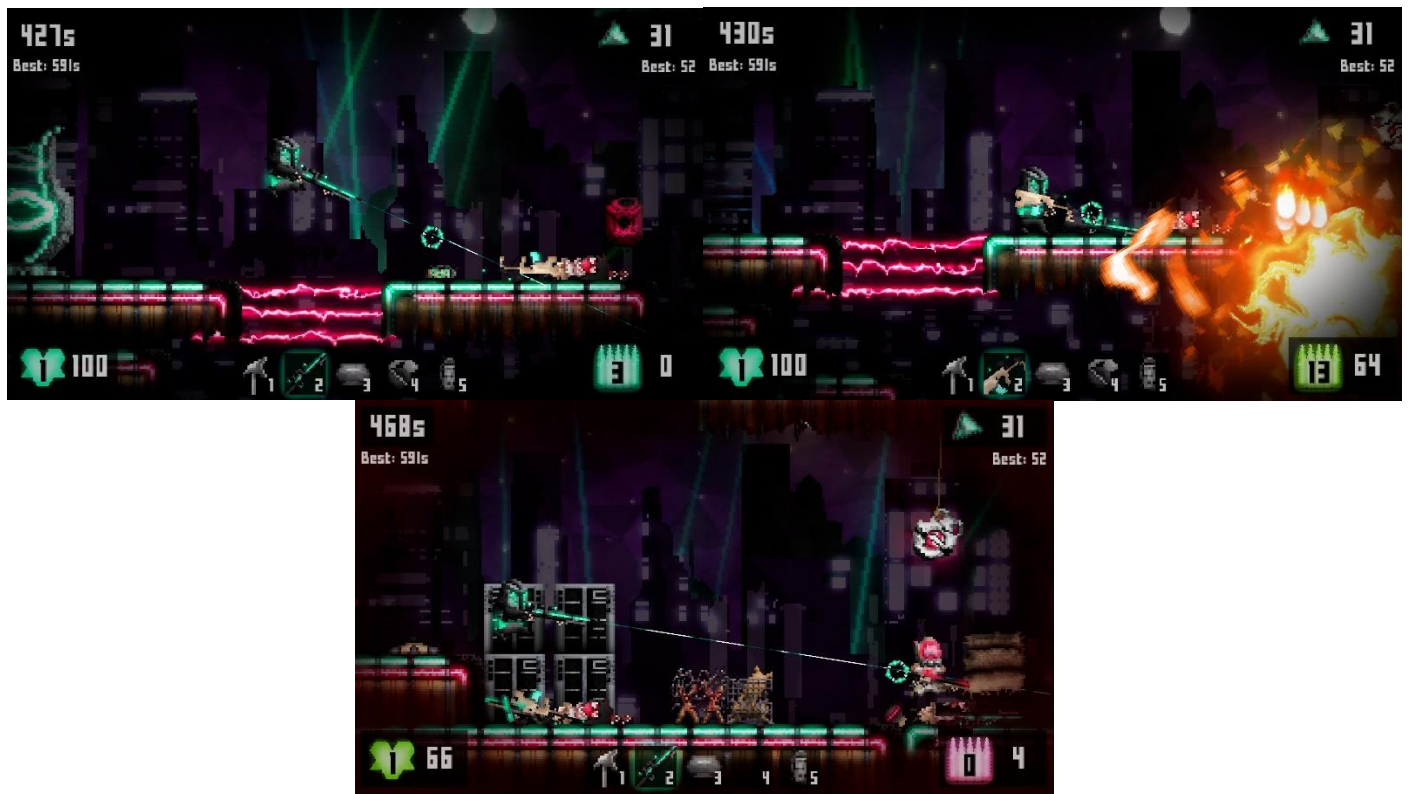




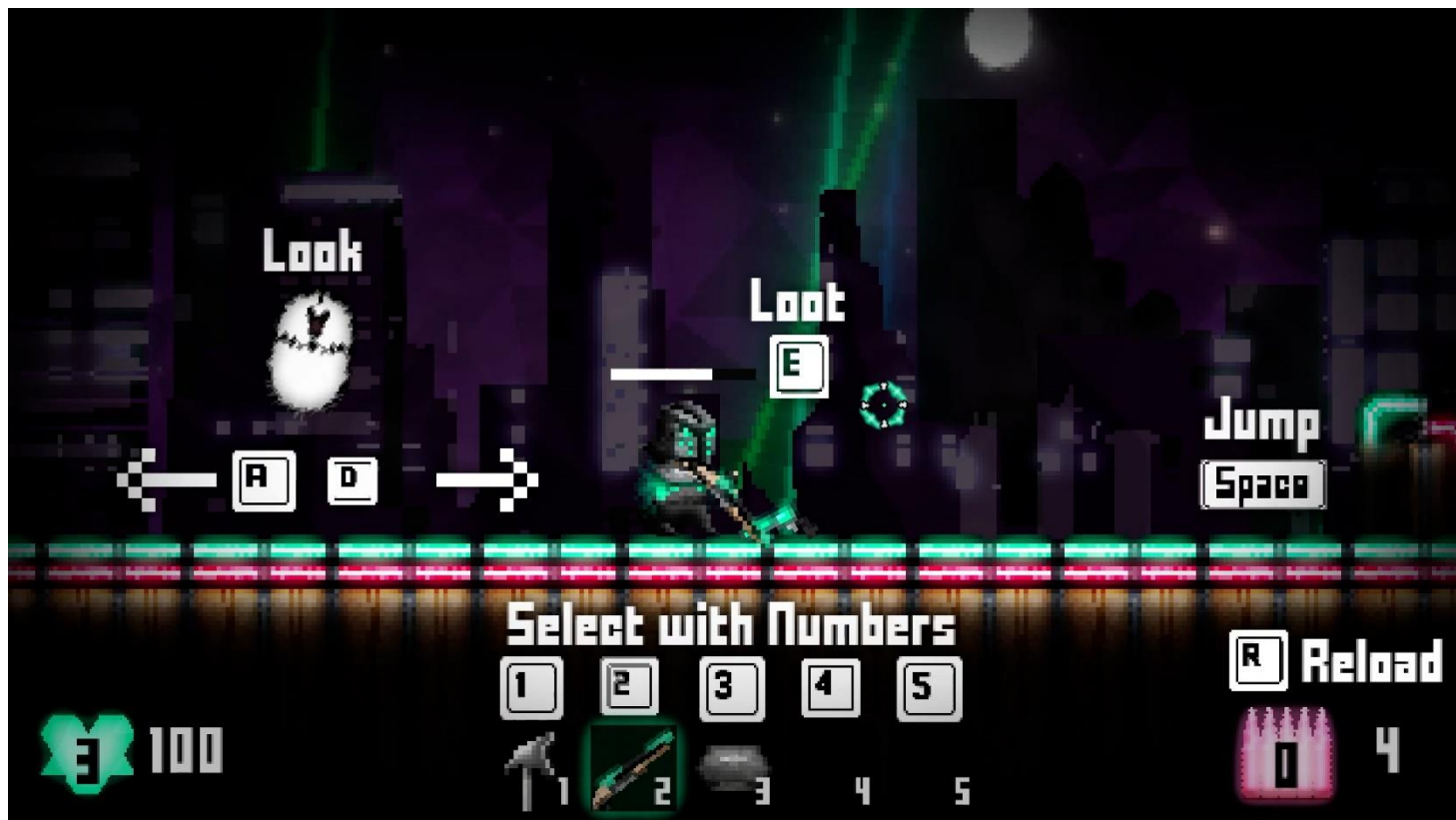








Controls



Input	Action
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A or Left Arrow	Run Left
D or Right Arrow	Run Right
Space	Jump
E or Enter	Use
Q	Parry with Axe
R	Reload Gun
Mouse	Aiming
Left Click	Shoot/Swing/Throw/Heal
1, 2, 3, 4 ,5	Select Slots 1 to 5
Numpad 0	Noclip
Esc/P/Tab/~	Pause Menu

About/Rules

PlatTAG is a Shooting Action Platformer Game

- Player must explore 3 levels and find an exit portal to progress
- They have to find levers and activate them to open the way to the exit
- Player has to reach the exit portal of the 3rd level to win the game
- There is a Timer that records the time taken to win and records the best time
- Each round of any level will spawn props and enemies randomly around the map

The Player:



- This is the character sprite of the player
- He is able to double jump

- Each jump is one tile high
- Holds up to 5 five items: Axe, Gun, Medkits, Grenades, and Flashbangs



Player HP:

- The player starts with 3 lives, and 100 Hit points
- Player loses lives when HP hits 0
- When they die, they drop all items from inventory, except the default Axe
- They respawn in the starting portal with 3 seconds of immunity
- Lives and HP continues to the next levels
- 1 HP is regenerated every second



Player Score:

- Scores in the form of glowing blue triangle Dorito chips
- Randomly drops from breaking stuff and enemies' faces.
- The Highscore is recorded regardless of if Player wins or not
- When dropped, it hovers in the air and disappears after a few seconds
- If the player is near, it will be attracted to the player like a magnet

Player Weapons:



Axe:

- The default starting weapon
- Deals 50 damage
- Normal Look Distance
- It can parry and reflect bullets if timed right



.357 Revolver:

- Deals 34 damage
- 6 rounds in the chamber
- 2 second reload
- Normal fire rate
- Medium accuracy
- Normal Look Distance
- Can be looted from lockers and enemies



Double Barrelled Shotty:

- Shoots 5 pellets
- Each pellet deals 20 damage
- Hold only 2 shells
- 2 second reload
- Normal fire rate
- Low accuracy
- Normal Look Distance
- Can be looted from lockers and enemies



Steyr AUG:

- Deals 25 damage
- 20 Bullet Magazine
- 2 second reload

- High fire rate
- High accuracy
- Far Look Distance
- Can be looted from lockers and enemies



M700 Sniper:

- Deals 50 damage
- 3 Bullet Magazine
- 3 second reload
- Very low fire rate
- Very High accuracy
- Very Far Look Distance
- Can shoot through walls
- Can be looted from lockers and enemies



M60 Machine Gun:

- Deals 34 damage
- No Reloads
- Very High fire rate
- Normal accuracy
- Normal Look Distance
- Can be looted from lockers and enemies

Items:



Medkit:

- Heals 80% of damage taken
- 3 seconds healing time
- Player is unable to move and jump when healing
- Can be cancelled mid heal
- Can be looted from lockers



Cluster Grenade:

- Explodes after 2 seconds
- Deals 50 damage
- Shoots 4 additional shrapnel after exploding
- Shrapnel causes smaller explosions
- Deals 25 damage each



Flashbang:

- Explodes after 1 second
- Disables humanoid enemy attacks and detection for 3 seconds
- If thrown by enemies, Blinds and deafens the player for 3 seconds
- Face away to avoid flash

Enemies:



Zombie:

- 100 HP
- Normal Speed
- Wanders when idle
- Chases the player when in range
- Will attempt to jump if blocked by tiles and props
- Tries to jump to dodge when shot at
- Tries to parry player's axe and bullets
- Attacks when near, Deals 50 damage



Light Gunner:

- 100 HP
- Normal Speed
- Wanders when idle
- Chance to spawn with .357, Shotty, or AUG
- Aims and Shoots at the player when in range
- Will attempt to jump if blocked by tiles and props
- Tries to jump to dodge when shot at
- Drops gun when killed



Heavy Gunner:

- 200 HP
- Slow Speed
- Wanders when idle
- Chance to spawn with Shotty, AUG, or M60
- Aims and Shoots at the player when in range
- Throws a grenade every few seconds
- Will attempt to jump if blocked by tiles and props
- Tries to jump to dodge when shot at
- Drops gun when killed
- Chance to drop a grenade



Sniper:

- 100 HP
- Normal Speed
- Wanders when idle
- Spawns with M700 Sniper
- Aims and Shoots at the player when in range
- Very long detect range
- Shoots through walls
- Throws a flashbang every few seconds when player is close
- Drops gun when killed
- Chance to drop a flashbang



Sentry Gun:

- 200 HP
- Stationary
- Looks around when idle
- Aims and Shoots at the player when in range
- Fires a homing missile every few seconds, creates a small explosion on contact
- Deals 25 damage
- Creates a big explosion when killed
- Deals 50 damage

Props:



Big Props:

- 200 HP



Medium Props:

- 100 HP
- Breaks into smaller props



Small Props:

- 50 HP



Painful Props:

- 200 HP
- Deals 10 damage on Contact
- Fire Barrel drops flames



Explosive Props:

- Causes large explosion when damaged
- Deals 50 damage
- Drops flames
- Deals 10 damage on Contact
- Hanging lamps fall when rope is cut
- Explodes on hitting the ground



Mine:

- Beeps for 2 seconds when Player is near
- Then Explodes and shoots shrapnel



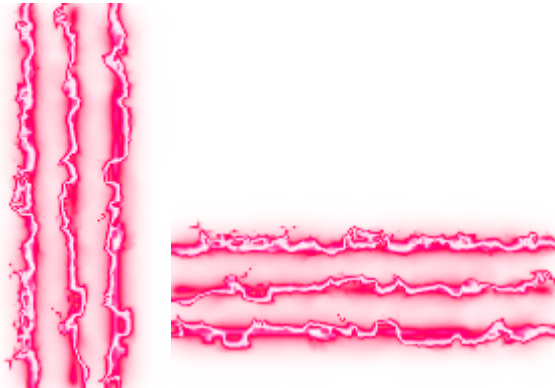
Locker:

- Provides supplies once
- 50% chance to be empty on spawn
- Chance to drop Guns, Medkits, Grenades, or nothing



Lever:

- Toggles gates on and off



Gate:

- You shall not pass
- Deals 10 damage on Contact



Teleporter:

- Serves as the starting and ending points of each level
- Provides iFrame for the player for 3 seconds on respawn

Game Objects

Player	Enemy	Items	Props	Decals	Misc	Behaviours
Player	Zombie	ItemChimp	Barrel Fire	PlayerBullet	Equipment Slots	Cannot Exit Sides
PlayerArms	Light	ItemGun	Barrel Fire Sensor	EnemyBullet	HUD Boxes	Die on Leaving Scene
ItemSensor	Heavy	ItemUtil	Gate	EnemyFlashbang	HUD Icons	HPManager
Cameraman	Sniper		Lever	EnemyGrenade	Tutorial Instructions	HPManagerPlayer
Shield	SniperCorpse		Locker	EnemyGrenadeShrapnel	Alert	LeverActivate
PlayerAxeHitbox	SentryGunBody		Mine	EnemyM700Bullet	Buttons	Standard Actor Behavior
PlayerParrybox	SentryGunhead		OilLamp	ExplosionDeco	ButtonTexts	Z Index
MotionBlur	Enemy arms		PropBig	ExplosionEnemy	Crosshair	Audio
PlayerBike	Enemy axe hitbox		PropExplosive	ExplosionFire	DeathStrip	HUD
	EnemyParrybox		PropHurt	ExplosionPlayer	FlashOverlay	LoseMenu

	ZombieArms		PropMed	Flame	LoadingStrip	PauseMenu
	Sniper Arms		PropSmall	Gibs	PauseBG	Standard Scene Behaviour
			Teleporter	PlayerFlashbang	PauseStrip	TutorialScene
			TeleporterExit	PlayerGrenade	Road	
				PlayerGrenadeShrapnel	Tagged	
				PlayerM700Aim	Tutorial Tickbox	
				PlayerM700Bullet	Title	
				SentryGunRocket	TransitionOverlay	
					WinStrip	

Credits:

Stencyl

Adobe Photoshop – Art

Adobe After Effects – Animations & VFX

Various video games – Sound Effects

Audacity – Audio Converting/Editing

MP3 tag

The Night Comes For Us – Night Club Fight OST

CryNN – Hyperior

Hotline Miami OST

Irving Force – Sewer Wars

Megadrive – Video Stalker

Pseudocodes:

The Player pseudocode

When created:

- Face Right
- Move Enabled
- Jump enabled
- Create Scale X and Y var and set to 100 for both
- Set speed var to 20
- Set jump var to 40
- Play Idle animation
- Face mouse enabled
- Aim mouse enabled
- Spawn player arms, assign to actor attr
- Spawn item sensor, assign to actor attr
- Camera on player enabled
- Set camera range var to 4
- Scope enabled
- Set heal timer var to 0
- Set jump count var to 2
- Last selected weapon should be axe
- Current selected weapon should be axe
- Change animation of arms to axe idle
- Enable iframe for 3 seconds, create shield
- Create a M700 aim actor but hide it for later use and assign to actor attr

Looking at mouse:

- Always grow player and arms to scale x and y var, which is 100 at first
- If mouse is left of player
 - o Set scale x to -100
 - o Otherwise, set to 100
- If scale x is less than 0
 - o Player is not facing right
 - o Otherwise, player is facing right
- If player is facing right
 - o Aim arms at the mouse
 - o If facing left, then add 180 degrees to offset the angle
- If aim mouse var is false, point arms in front at 0 degrees

Moving:

- Make arms and item sensor follow the player x and y
- If right button is down
 - o Positive x speed
 - o If facing right, play run animation
 - o Otherwise, play runback animation
- Otherwise If left button is down
 - o Negative x speed
 - o If facing right, play runback animation
 - o Otherwise, play run animation
- Otherwise, 0 x speed and play idle animation

Jumping:

- If jump button was pressed
 - o Jump count must be more than 0
 - o Set jump count to 2 when on the floor
 - o Minus 1 jump count
 - o Set y speed to 0 first to counter gravity, to make jump height consistent
 - o Push player up with jump force
 - o Play jump animation
 - o If jump button was pressed again, Double jump on the last jump count, minus 1 jump count, 0 remaining
 - o Do motion blur effect on double jump
 - o If player is falling but didn't jump before, set jump count to 1

Switching equipment selections:

- Action must be true
- If 1 is pressed, and not selected axe
 - o set selection to axe
 - o Play axe idle anim for arms
 - o Enable aim mouse
- If 2 is pressed, and not selected gun, and magazine or reserve ammo must be more than 0
 - o Set selection to gun
 - o Play gun idle anim for arms
 - o Gun idle anim name depends on the name of current type of gun
 - o Enable aim mouse
- If 3 is pressed, and not selected Medkit, and Medkit ammo is more than 0
 - o Set selection to Medkit
 - o Play Medkit idle anim for arms

- Disable aim mouse
- If 4 is pressed, and not selected grenade, and grenade ammo is more than 0
 - Set selection to grenade
 - Play grenade idle anim for arms
 - Enable aim mouse
- If 5 is pressed, and not selected flashbang, and flashbang ammo is more than 0
 - Set selection to flashbang
 - Play flashbang idle anim for arms
- If ammo runs out while having gun selected
 - Change to axe
- If Medkit, grenade, or flashbang runs out while having them selected
 - Change to gun if that was the last selected
 - If no ammo then change to axe
 - If last selected was axe, then just change to axe instead of gun

Doing actions:

- Action must be true
- For axe, If mouse is down
 - Disable action
 - Play axe swing anim for arms
 - In the middle of the animation, create invisible axe hitbox
 - scale that hitbox to scale x and point to mouse
 - the hitbox will disappear by itself after animation
 - After that, enable action again
 - Play axe idle anim for arms
- For axe, if parry button is pressed
 - Disable action
 - Play axe parry anim for arms
 - Create invisible parry box
 - Aim parry box to mouse and scale to scale x
 - Make parry box follow the player x and y
 - After animation, kill parry box and disable parrying bool
 - Enable action
- For any gun except M700, if mouse is down
 - Disable action
 - Play gun shoot anim for arms
 - Set inaccuracy according to type of gun
 - Create bullet

- Match bullet anim according to type of gun
- Point bullet at mouse plus or minus accuracy
- Set velocity of bullet to 100 at direction of mouse
- Minus 1 ammo from ammo mag
- After animation, enable action, play gun idle anim for arms
- For M700 gun, if mouse is down
 - Disable action
 - Play m700 shoot anim for arms
 - Minus 1 ammo from ammo mag
 - Set inaccuracy to 1 degree
 - Create m700 bullet
 - Point it at mouse plus minus inaccuracy
 - The m700 bullet will disappear by itself
 - After animation, enable action, play m700 idle anim for arms
- For any gun except m60, if reload button is pressed, or run out of ammo while mouse is down
 - Ammo magazine must be lower than ammo magazine max
 - Disable action
 - Play gun reload anim for arms
 - Disable aim mouse
 - Set reload timer to 0
 - Do every 0.1s, increase reload timer by 0.1
 - Once reload timer hits 2 seconds (3 seconds for M700), cancel the repeater
 - Set reload timer back to 0
 - Enable action
 - Play gun idle anim for arms
 - Enable aim mouse
 - If ammo reserve is less than the difference between ammo mag max and ammo mag,
 - Transfer all remaining ammo reserve to ammo mag
 - Set ammo reserve to 0
 - Otherwise,
 - Decrease ammo reserve by the difference between ammo mag max and ammo mag
 - Set ammo mag to ammo mag max
- For flashbang or grenade, if mouse is pressed
 - Disable action
 - Play flashbang or grenade throw anim for arms
 - minus 1 flashbang or grenade ammo
 - Create flashbang or grenade
 - Push it at the direction of mouse with 75 force

- After animation, enable action, play flashbang or grenade idle for arms
- For medkit, if mouse is down, and not healing, and player HP is not full, and not in mid air
 - Disable action
 - Enable healing bool
 - Set heal timer to 0
 - Stop player from moving and jumping
 - Play medkit use anim for arms
 - Do healing animation for player
 - Do every 0.1s, plus 0.1 to heal timer
 - If mouse was released while healing,
 - Set healing to false
 - If healing is false,
 - Set heal time back to 0
 - Enable action
 - Play idle anim for arms and player
 - Enable move and jump
 - Stop the repeater
 - Otherwise if healing was not interrupted for 3 seconds,
 - Minus 1 medkit ammo
 - restore 80% of the total health loss back to player hp
 - set heal timer to 0
 - set healing to false
 - play idle anim for arms and player
 - enable action
 - enable move and jump
 - Stop the repeater

Picking up guns:

- When item sensor hits a gun item, and use button was pressed
- Action must be true
- If have existing gun, but not the same gun,
 - Create another gun item
 - Match its animation to current gun
 - Empty all the default ammo from that gun
 - Add ammo mag and ammo reserve to that gun
- Set ammo mag max to match the first gun item
- If it's the same gun currently equipped,
 - Add its ammo reserve and ammo mag to the player's ammo reserve

- Otherwise, match the player's ammo mag and reserve to the gun's ammo mag and reserve
 - o Set selection to gun
 - o Play gun idle for arms according to the gun item type
 - o Enable aim mouse
 - o Kill the gun item

Picking up utilities like Medkits, grenades, flashbangs:

- When item sensor hits a util item, and use button was pressed
- If it's a Medkit, plus 1 medkit ammo
- If it's a grenade, plus 1 grenade ammo
- If it's a flashbang, plus 1 flashbang ammo
- Kill util item

Picking up score items:

- When item sensor hits a score item
- Add 1 to score
- Kill score item

When player is killed:

- Set player alive bool to false
- Kill arms
- Kill item sensor
- Kill m700 aim
- Kill axe hit box
- Kill axe parry box
- Kill shield

When detecting that a flashbang has exploded:

- If player faces at the flash bang it is in the camera view,
- Blind and deafen the player

Aiming with the m700:

- Make the m700aim actor attr from earlier follow the player
- Point at mouse
- If m700 is selected, and not reloading, and action is true
 - o Unhide it by scaling from 0% width to 100% width
- Otherwise,
 - o Hide it by scaling width to 0%

The Zombie pseudocode

Aggro:

- Set distance to $a^2+b^2=c^2$ with x and y of player and self
- If distance less than aggro range, set aggro to true
- If player exit aggro range, disable aggro and set a 2 second cooldown to aggro again

Moving:

- If aggro is true,
 - o If player is right, move right
 - o If player is left, move left
- Otherwise if not aggro,
 - o Randomly move and stop
 - o Randomly face left or right

When hitting a tile, prop, player, enemy:

- If left side hit while moving left, or if right side hit while moving right
 - o If aggro, jump
 - o If not aggro, just change direction
- If tile is a corner piece
 - o If moving, jump after .5 seconds

Swinging axe:

- If player is in attack range, and facing the player
- Do axe attack similar to player's axe attack

Parrying:

- If facing the player, and mouse is down, and player is holding gun
- Do axe parry similar to player's axe parry

When flashed by flashbang:

- Set aggro to false
- Set action to false

The Gunner pseudocode

When created:

- Choose a random gun type
- Set ammo, inaccuracy and reload duration according to gun
- Play gun idle anim according to gun for arms
- Set an aggro range
- Set a grenade range
- Set ammo grenade to 1
- Set aim offset for more inaccuracy

Aggro:

- Set distance to $a^2+b^2=c^2$ with x and y of player and self
- If distance less than aggro range, set aggro to true
- If player exit aggro range, disable aggro and set a 2 second cooldown to aggro again

Aiming:

- Point arms at aim x and y
- If aggro, set aim x and y to player x and y plus minus aim offset
- Otherwise if not aggro, randomly move aim y up or down every few seconds

Shooting gun:

- If player in aggro range
- Randomly toggle shoot Boolean
- If shoot is true, spray bullets until shoot becomes false
- If shoot is true but no ammo, reload
- Similar to player shooting and reload

Throwing grenade:

- If ammo grenade more than 0, and player in grenade range,
- Set action to false
- Play grenade throw anim for arms
- Minus 1 grenade ammo
- Create grenade and push to direction of player with 75 force
- After animation, enable action, play idle anim
- After 5 seconds, plus 1 ammo grenade

The Sniper pseudocode:

Shooting:

- If ammo more than 0,
- Disable action
- Create m700 bullet
- Play aim anim for bullet (no damage, just laser)
- If player is still in aggro range,

- After few seconds, Stop aiming at player
 - After a few milliseconds, play shoot anim for bullet
 - Minus 1 ammo
 - After animation, play idle anim, enable action
- If player no more in aggro range,
 - Kill bullet (stop laser)
 - play idle anim, enable action

The Homing rocket pseudocode:

- always set velocity to direction self
- spin self to player over .2 seconds
- set homing timer to 1 second
- after 1 second stop homing