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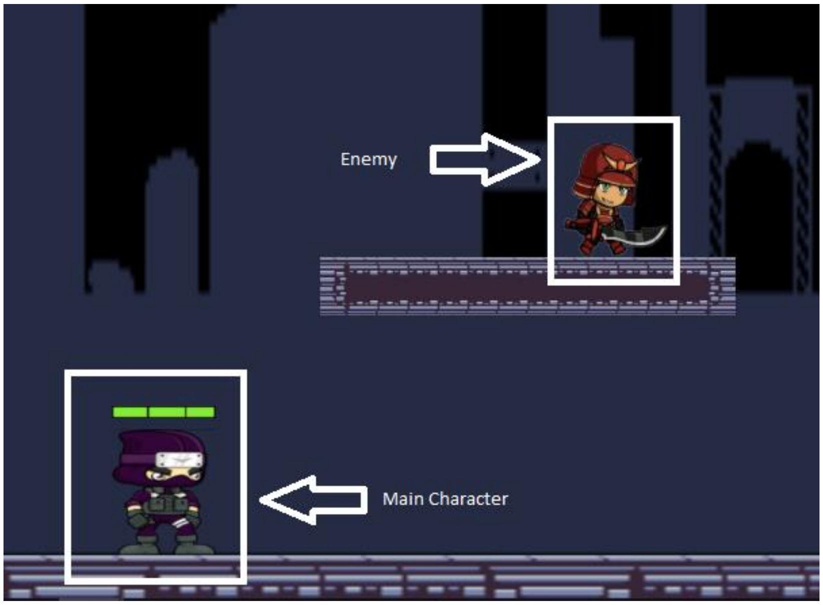
GAME REPORT

The main character in the game is a Ninja, which is controlled by the player. The ninja can attack by throwing kunais and by attacking with his melee weapon.

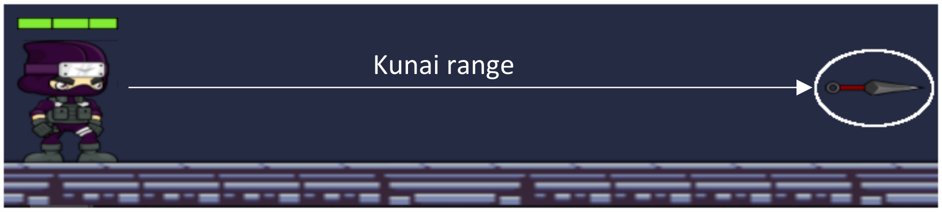
Player (Ninja):

The Player can control the main character by the conventional keys ‘Left Arrow’ for going left and ‘Right Arrow’ for going right and with the ‘Space’ key the ninja can jump. They can also control the characters attack with the keys ‘A’,’D’ and ‘W’.
The character follows the laws of gravity and while it’s jumping and reaches a specified maximum height value, the jump’s speed decreases till becomes 0 and then increases at the falling. Whilst is jumping the ninja can change direction of his x position and move left or right, but that is significantly slower that running.



Player (Attack):

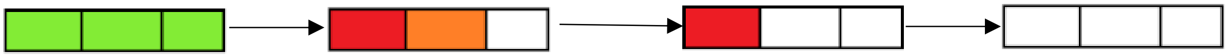
The enemies have basic A.I. and can only attack in melee form which means that the main character must be in range, thus they can attack him. The attack has a cooldown of approximately 2 seconds. The character can attack by throwing a kunai, which install kills the enemy.



Also, the Ninja has the ability to dash attack with his melee weapon. The 'A' key is responsible of attacking on the left of the character and the key 'D' of attacking on the player's right. Whenever is close enough to an enemy his ability enables, allowing him to dash through them and kill them. If the player misses and not kill the enemy, they must wait some milliseconds to hit again with their dash attack. The cooldown for both the kunai and the dash attack is added to make the game fairer.

Player's Health Bar:

The player has health bar of three lives. Each time the enemy's attack effect finishes, and the player is within range, he loses one of his health bars. When it gets to zero (empty health bar) the player dies and his 'dead' texture effect enables, disabling player to move left, right, jump or attack.



Textures:

The character has textures for jumping, running, attacking, for idle, when the character dies and for the health bar. Each of these effects are included in separated arrays which it makes it easier to swap between textures and let the user enjoy a smoother transition between actions.

Idle

Run

Jump

Dead

Melee Attack

Throw Kunai

Texture transition pseudocode:

```
texCounter = timer = 0;
if(isDoing){
        if(timer%100==0){
                texture = textureArray[texCounter];
                texCounter++;
        }
        else texture = textureArray[texCounter];

        if(texCounter > textureArray.size){
                texCounter = 0;
                timer = 0;
        }
}
```

All the transitions between texture is with a similar way. They are being controlled by the variable ''isDoing'', which can be walking, jumping, running and attacking according to the current action

***texture* is the current texture shown

Collison Detection:

The character can collide with all he platforms in the game as well as the enemies. The collision with the enemies while is dash attacking and by throwing kunai is done by calculating the distance of the player or the moving kunai with the enemies using Euclidean distance. The collision with the "on-air" platforms are being done by checking and calculating the ninjas x, y position, the platforms coordinates and comparing them. All the platforms collisions were made with three main statements, which were defining the characters actions at that specific time. The actions were "jumping", "falling" and "on the box".

Platform Collision pseudocode:

Pseudocode for "falling"

```
if((xPos <= boxLeftX) && (xPos >= boxRightX)
    && ((yPos>boxTopY) && (yPos<boxTopY+4.0)))
{
   onBoxX = true;
   yPos = boxTopY + 2.0;
   falling = false;
   canJump = true;
}
```

When the ninja is falling and it happens to be between these coordinates the is on the platform. Whilst on that platform, the ninja can jump again, and can not fall from the platform.

Pseudocode for "onTheBox"

```
if((xPos < boxLeftX) || (xPos > boxRightX)
    && onBoxX)
{
   onBoxX= false;
   canJump = true;
   falling = true;
}
```

When the ninja exceeds the range of the platform's x position, it starts falling from the platform. As soon as the ninja reaches the ground, he can jump again.

Pseudocode for "jumping"

```
if((yPos >= boxBottomY)
&& (yPos <= boxBottomY + 2.0)
&&  (xPos >= boxLeftX)
&& (xPos <= boxRightX))
{
   falling = true;
}
```

When the ninja is underneath the platform and tries to jump it will hit his head on the platform and fall.

**The '*X*' in '*onTheBoxX*' represents the number of each platform.

***xPos* and *yPos* are the *x* and y position of the player.

***box* is the current platform.