Tamagotchi Micro:Bit Project

Tamagotchi is a keychain-sized virtual pet simulation game. The goal of the game is to keep the pet alive by feeding it when it is hungry, healing it when it is sick, etc.

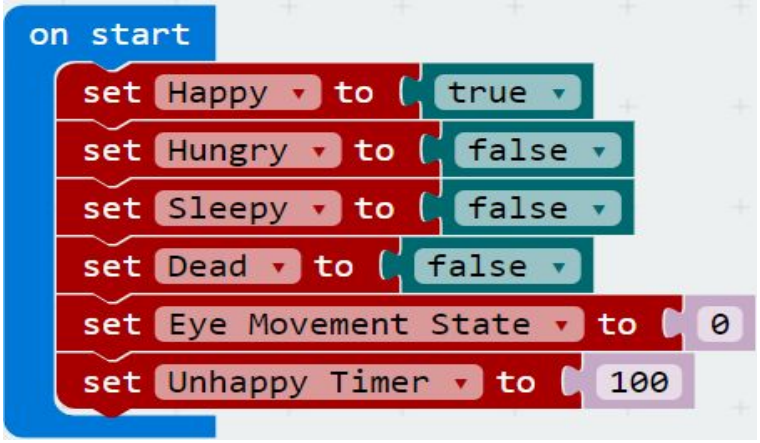
We are going to make a simplified version of this game where the pet can either become hungry or tired. The user can make the pet happy again by pressing either the A or the B button.

Variables Needed in Project

- **Mood Chance** - stores a value that will determine the mood (happy, sleepy, hungry, etc.)
- **Happy** - a boolean variable that will show a happy face when it is TRUE.
- **Hungry** - a boolean variable that will show a sad face when it is TRUE, meaning the pet is hungry.
- **Sleepy** - a boolean variable that will show a sad face when it is TRUE, meaning the pet is sleepy.
- **Dead** - a boolean variable that will show a lifeless face when it is TRUE, meaning the pet is dead.
- **Unhappy Timer** - stores a value that will be used to count down from when the pet is not happy. The pet will die when this timer reaches zero.
- **Eye Movement Chance** - stores a value that will determine the value stored in "*Eye Movement State*".
- **Eye Movement State** - stores a value that will determine where the pet's eyes will look.

Tamagotchi Setup

The first block of code we will do is initialize the variables for the project, when the program is first run.

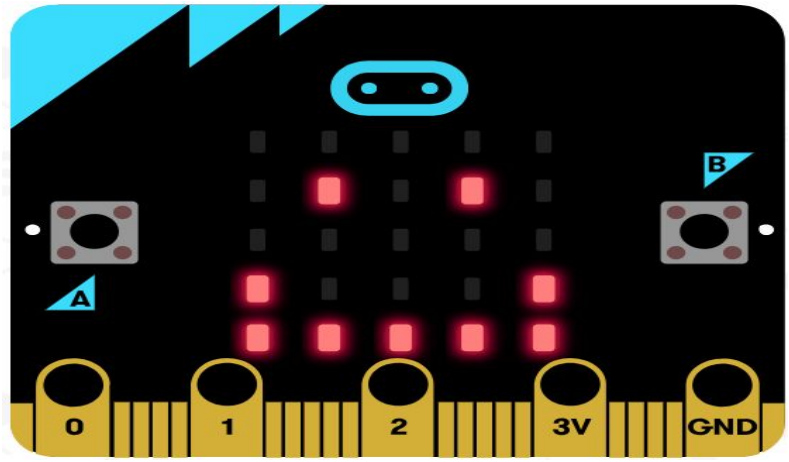


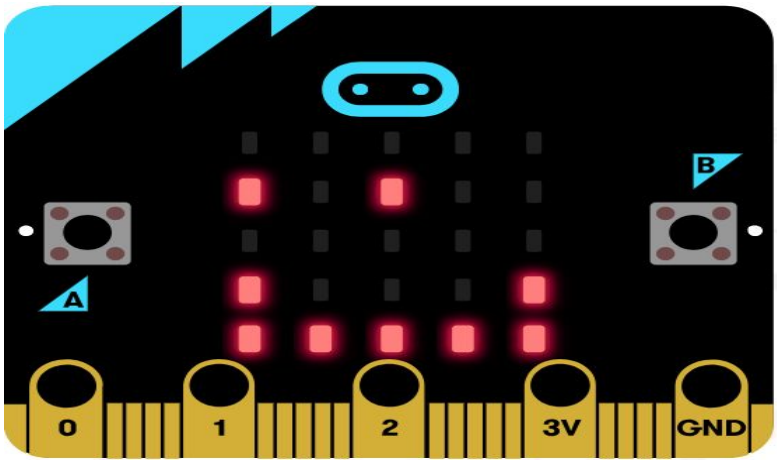
<u>Tasks</u>

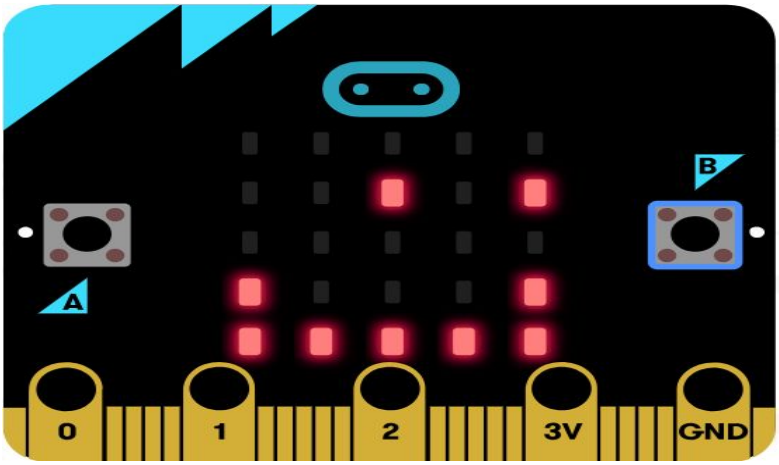
1. Copy the code blocks above.

Eye Movement

The next step is to program the pet's eye movement. When the pet is happy, it's eyes should occasionally (randomly) glance left and right. See the examples of each of these faces below.







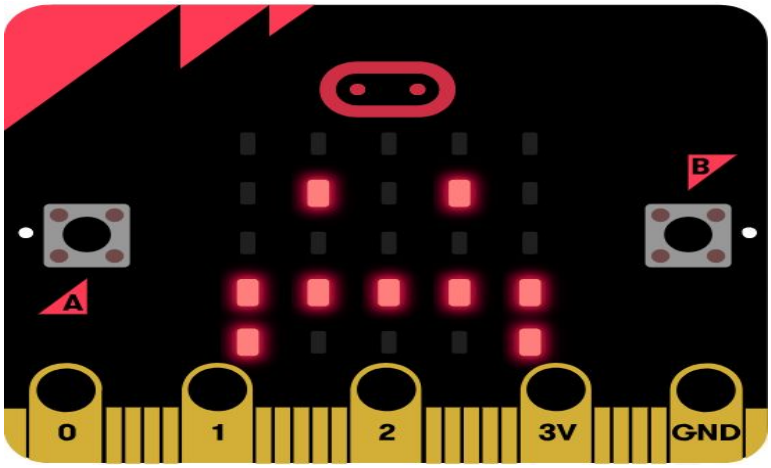
```
forever:
    set "Eye Movement Chance" to random value between 0 and 100

    if "Eye Movement Chance" is less than or equal to 10, then:
        set "Eye Movement State" equal to 2
    else if "Eye Movement Chance" is greater than 10 and less than or equal to 20, then:
        set "Eye Movement State" equal to 1
    else, then:
        set "Eye Movement State" equal to 0

    if "Happy" is true, then:
        if "Eye Movement State" is equal to 0, then:
            show face looking forward
        else if "Eye Movement State" is equal to 1, then:
            show face looking left
        else, then:
            show face looking right

        pause for 2000 ms
```

Tasks

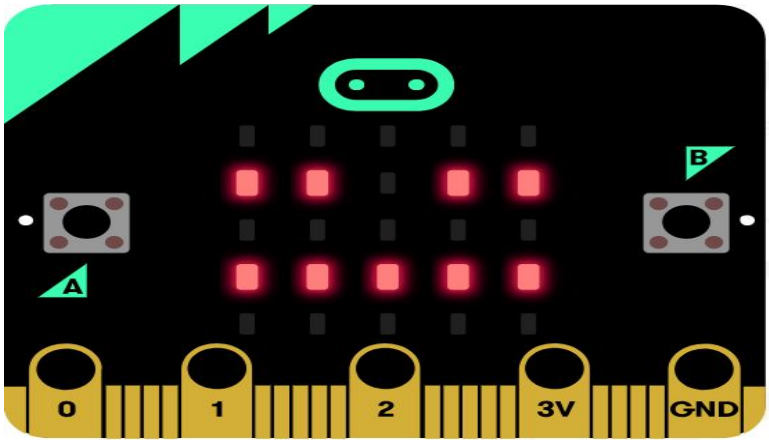
1. Convert the pseudocode to working code blocks.

Mood Changing

Now, we will look at when the pet's mood changes when it is hungry or tired. When the pet is unhappy, it's face should look like the following:



If the pet dies, it's face should look like the following:



See below the pseudocode for this section.

```
forever:
    if "Happy" is true, then:
        set "Mood Chance" to a random value between 0 and 5000

    if "Mood Chance" is less than or equal to 1, then:
        set "Happy" to false
        set "Hungry" to true
        set "Sleepy" to false
    else if "Mood Chance" is greater than 1 and less than or equal to 3, then:
        set "Happy" to false
        set "Hungry" to false
        set "Sleepy" to true
    else, then:
        set "Happy" to true
        set "Hungry" to false
        set "Sleepy" to false

    if ("Hungry" is equal to true or "Sleepy" is equal to true) and "Unhappy Timer" is equal to 0, then:
        set "Dead" to true

    if "Hungry" is equal to true or "Sleepy" is equal to true, then:
        show sad face
        change "Unhappy Timer" by -1

    if "Dead" is true, then:
        show dead face
        pause for 8000 ms
        set game over
```

Tasks

1. Convert the pseudocode to working code blocks.

Feeding & Putting to Bed

The final section is for the player to be able to press either the A button or the B button when the pet is hungry or tired to make the pet happy again before it dies.

```
on button A pressed:
    if "Hungry" is equal to true, then:
        set "Happy" to true
        set "Hungry" to false
        set "Sleepy" to false
        set "Unhappy Timer" to 100
        show "tick" icon
    else, then:
        show "x" icon

on button B pressed:
    if "Sleepy" is equal to true, then:
        set "Happy" to true
        set "Hungry" to false
        set "Sleepy" to false
        set "Unhappy Timer" to 100
        show "tick" icon
    else, then:
        show "x" icon
```

Tasks

1. Convert the pseudocode to working code blocks.

Extra Tasks

1. Look through the code and play around with some of the values to see how the program changes. For example, change the maximum number of "*Mood Chance*".