

Target Game - Timing

What are we aiming for?

An improvement to the target program that moves the targets after a certain period of time.

Why?

To make the game harder! And introduce us to timing in processing.

Steps to make this app:

1. Introduce `millis()`: a function for telling time.
2. Tell when a seconds has passed -
3. Make a timer app.
4. When a second has passed - change the position of the target.

1: Introduce `millis()` a function for telling time

`millis()` is a function that returns the current program time in milliseconds. Unlike `ellipse()`, `rect()` or `drawTarget()` is it not void - it returns a number. Like `dist()`.

1. Create a new project.
2. Make a simple program to see what `millis()` does (copy the below code):

```
void draw() {
  background(0);
  text(millis(), 20, 20);           //program time in milliseconds
  text(millis()/1000, 20, 40);      //program time in seconds
}
```

2: Tell when a seconds has passed

1 second = 1000 milliseconds.

Therefore to tell if a second has passed from the start of the program `millis() > 1000`.

Make this change to the above app. So after a second the background changes colour or something.

3 Make a timer app.

At the moment we are checking when 1 second has passed since the start of the app.

We do this by checking: time at start of the app in milliseconds = 0.

Time 1 second after the start of the app in milliseconds = 0 + 1sec = 0 + 1000 = 1000.

Now we will wait on some user input and then time 1 second after that.

We need a variable to store the end of the timer.

```
int nextTimeToCheck;           //our timer variable
```

```
//in setup
nextTimeToCheck = millis()+ 1000;    //set the initial timer for 1
second

//in draw
if(millis() > nextTimeToCheck ){
    //do something.
}

//after user input change the timer time
nextTimeToCheck = millis()+ 1000;
```

And we set the timer when we press a button or a key (you choose).

4: When a second has passed - change the position of the target.

We now want to move the code from our test program to our target app.

We need:

- variable that stores time to move the target.
 - reset:
 - Everytime we hit the target.
 - If the time moves of its own accord.
- When timer runs out: move the target.

Improvements you can make:

- Have a limited amount of targets - ie the target can only move or be shot a certain number of times.
- Or if your score goes over a certain amount the target starts moving quicker.