



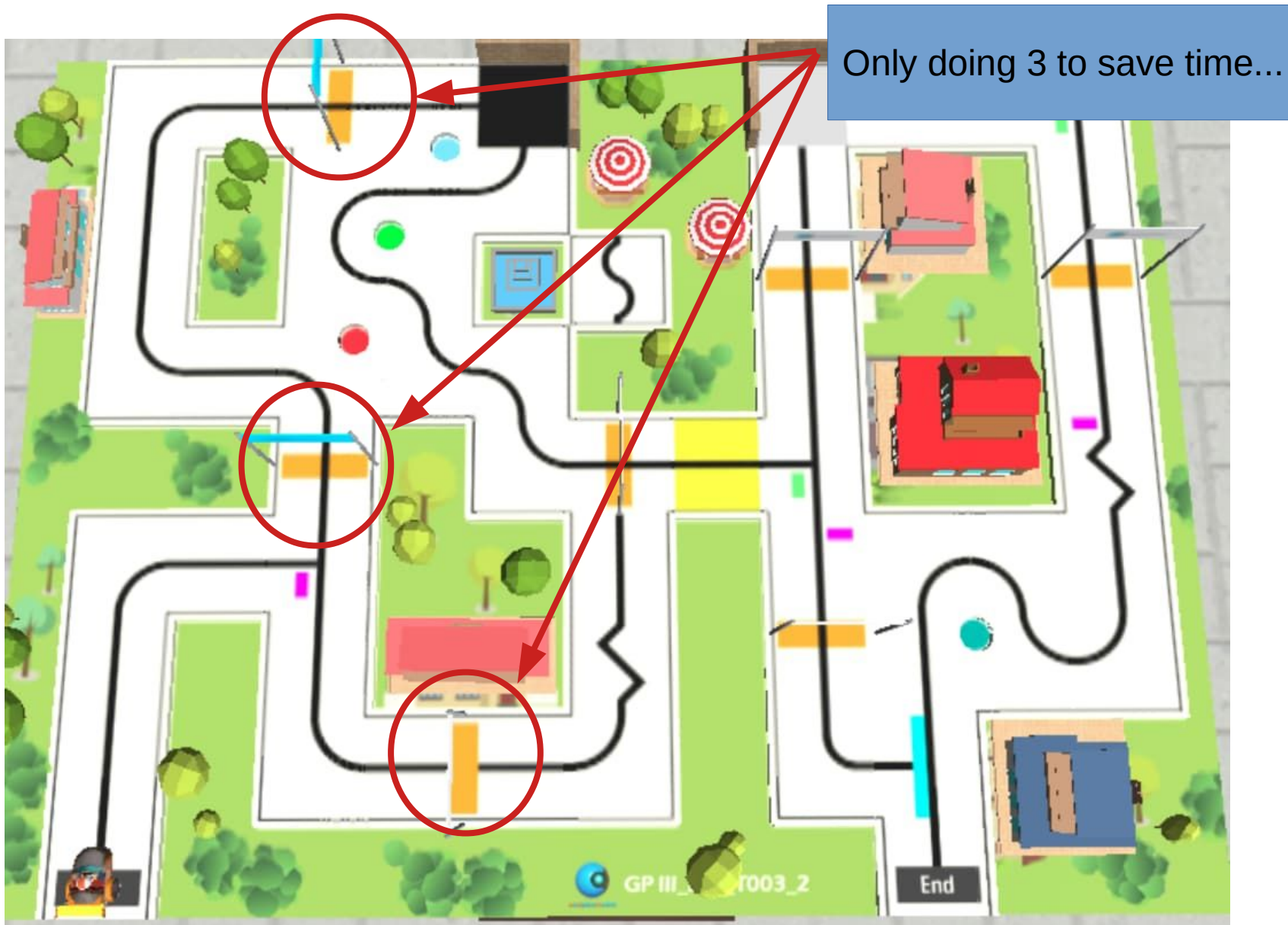
RCAP CoSpace Autonomous Driving (Design Pattern) 2021

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Design Patterns?

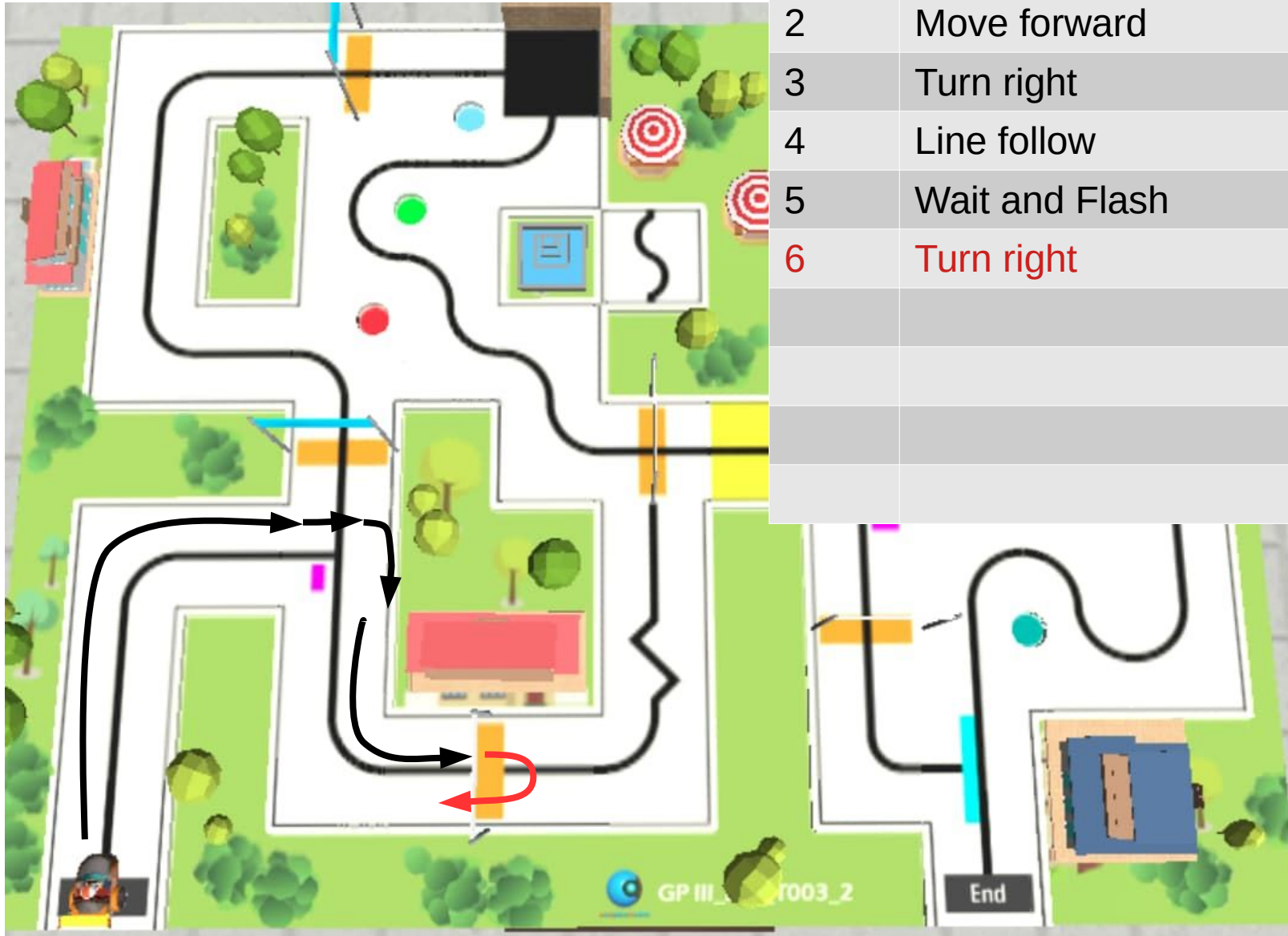
- What?
 - A structured way of writing code
- Why?
 - Turns a complicated puzzle into a simple step-by-step procedure
- How?
 - State machine pattern

Demo



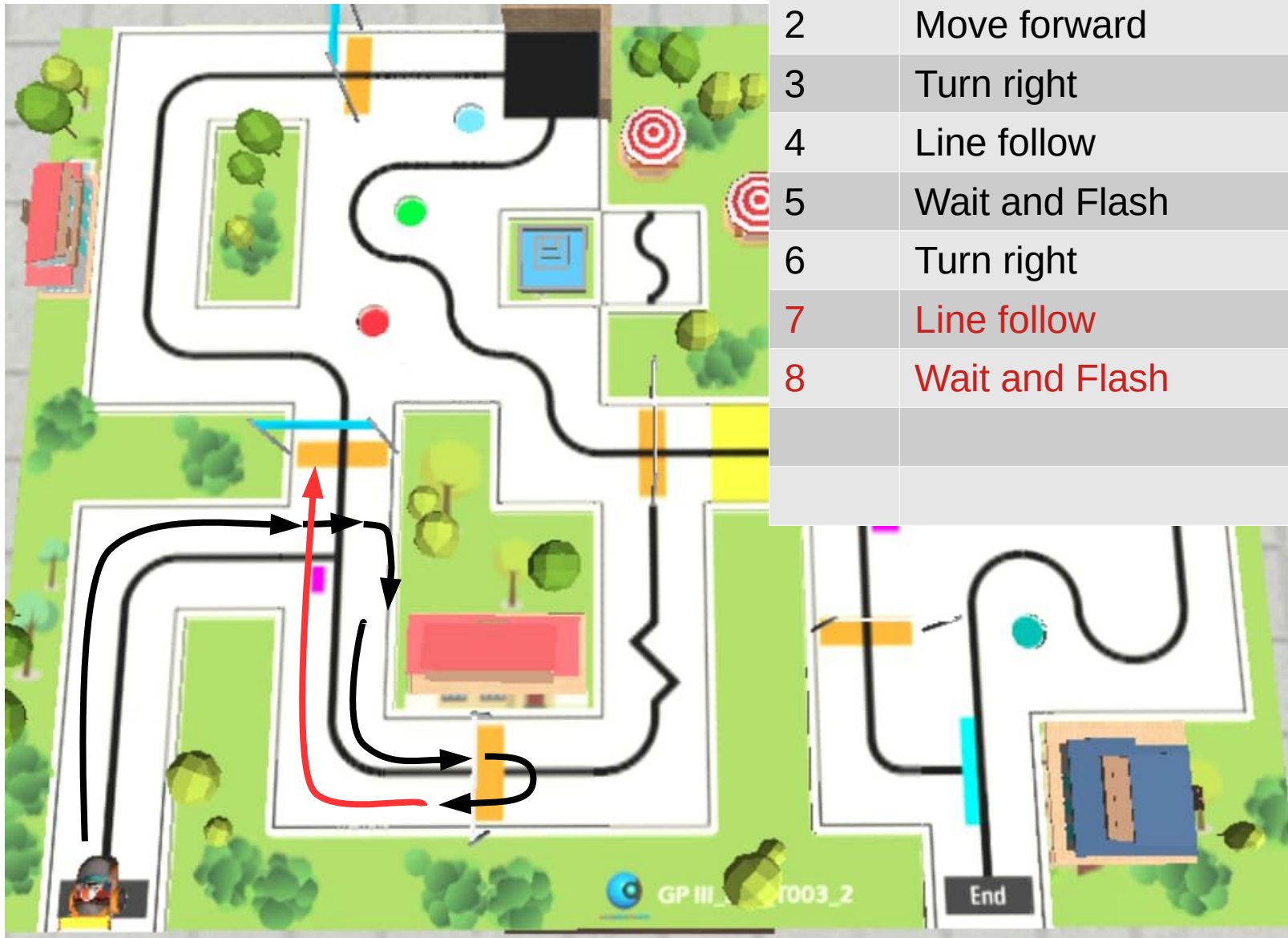
Demo

State	Action	End
1	Line follow	Purple
2	Move forward	Duration up (?s)
3	Turn right	Point south
4	Line follow	Orange
5	Wait and Flash	Duration up (2s)
6	Turn right	Point west



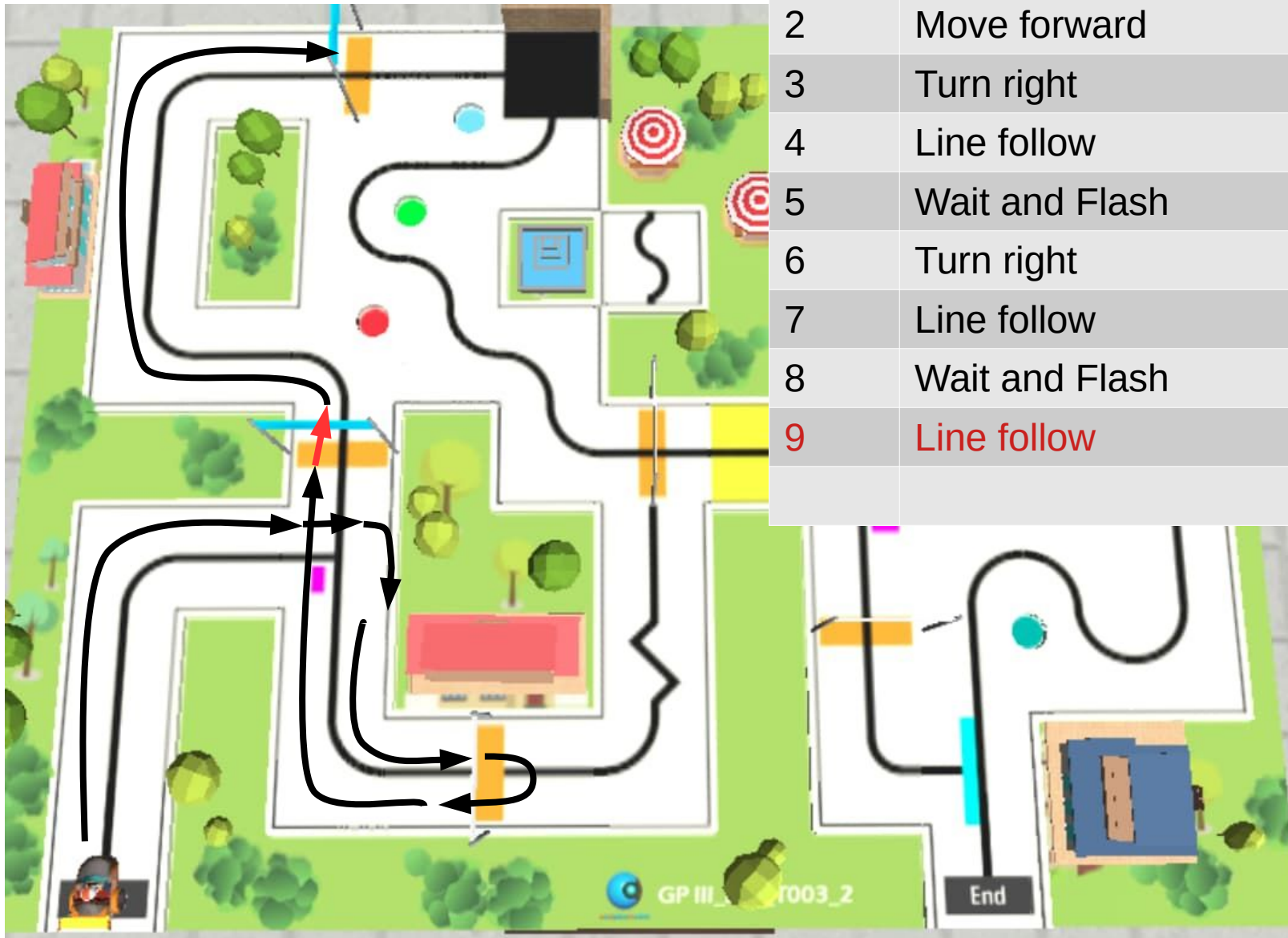
Demo

State	Action	End
1	Line follow	Purple
2	Move forward	Duration up (?s)
3	Turn right	Point south
4	Line follow	Orange
5	Wait and Flash	Duration up (2s)
6	Turn right	Point west
7	Line follow	Orange
8	Wait and Flash	Duration up (2s)



Demo

State	Action	End
1	Line follow	Purple
2	Move forward	Duration up (?s)
3	Turn right	Point south
4	Line follow	Orange
5	Wait and Flash	Duration up (2s)
6	Turn right	Point west
7	Line follow	Orange
8	Wait and Flash	Duration up (2s)
9	Line follow	Duration up (?s)



Code Template

State	Action	End
1	Line follow	Purple

```
void Game0()  
{  
    stateTime++;  
  
    if (gameState == 1) {  
        lineFollow(20);  
        if (is_purple()) {  
            nextState();  
        }  
    }  
}
```

Code Template

State	Action	End
1	Line follow	Purple

```
void Game0()  
{
```

```
    stateTime++;
```

```
    if (gameState == 1) {  
        lineFollow(20);  
        if (is_purple()) {  
            nextState();  
        }  
    }
```

```
}
```

```
}
```

If state equals 1...



Code Template

State	Action	End
1	Line follow	Purple

```
void Game0()  
{  
    stateTime++;  
  
    if (gameState == 1) {  
        lineFollow(20);  
        if (is_purple()) {  
            nextState();  
        }  
    }  
}
```

...then line follow...

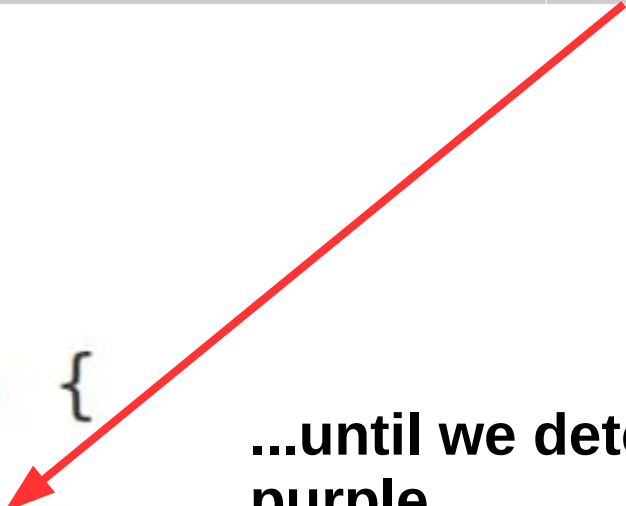


Code Template

State	Action	State	End
1	Line follow		Purple

```
void Game0()  
{  
    stateTime++;  
  
    if (gameState == 1) {  
        lineFollow(20);  
        if (is_purple()) {  
            nextState();  
        }  
    }  
}
```

...until we detect purple.



Code Template

```
void Game0()  
{  
    stateTime++;  
  
    if (gameState == 1) {  
        lineFollow(20);  
        if (is_purple()) {  
            nextState();  
        }  
    }  
    if (gameState == 2) {  
        moveForward(20);  
        if (is_duration(1)) {  
            nextState();  
        }  
    }  
}  
}
```

State	Action	End
1	Line follow	Purple
2	Move forward	Duration up (?s)

Repeat the same thing for the second state, third state, etc...

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