

Coding for Two Players

You may have noticed that using “if (keyPressed)” will only let us detect one keystroke at a time. This is clearly no good if we are going to have two players in one of our games - having only one player able to input at a time is more than a little limiting! You *could* have one player use the mouse, but there will be plenty of situations where that isn’t enough. Besides, there is a better way.

Using “void keyTyped()” and “void keyReleased()”, along with an ArrayList, we can add keys to the ArrayList when they are pressed, and remove them when they are released. Then instead of checking “if (key == ‘a’) {...}” we will check “if (characterArray.contains(‘a’)) {...}”.

These are the steps you will need to follow:

1. Create an ArrayList as follows (note that “Character” is what’s called the “wrapper class” for char, which we’ve seen before. A *Character* behaves very much like a *Char*):

```
ArrayList<Character> keysIn;
```

2. In order to detect when a key is pressed we use “void keyTyped()”. This code will execute each time the user presses down a key. Note that the operating system will trigger a repeat if you hold down the key (notice this when you’re typing in any program - you don’t get a new letter every frame if you hold the key down, but you will get it to repeat if you hold it down long enough), so we need to be careful to only add a key if it hasn’t already been added. Remember that “!” means “NOT”, so “if (!keysIn.contains(key))” will be true if keysIn *doesn’t* contain “key”.

```
void keyTyped() {
    if (!keysIn.contains(key)) {
        keysIn.add(key);
    }
}
```

3. We can detect the player releasing a key using “void keyReleased()”. When they release the key we will remove it from our ArrayList - this means that ArrayList will always contain the list of keys *currently being held down*:

```
void keyReleased() {
    if (keysIn.contains(key)) {
        keysIn.remove(new Character(key));
    }
}
```

From there, all you need to do is swap out “if (key == ‘a’) {...}” for “if (characterArray.contains(‘a’)) {...}” and you should be good to go!

Task

Create a new project, add two ellipses to the screen, and allow player one to control the first ellipse with W-A-S-D, and player two to control the other with I-J-K-L.

A Short Step-By-Step

If you’re having trouble visualising how this will work, this step-by-step might help:

- 1) The game starts. **ArrayList = { }** (it is empty)
- 2) Player one starts moving up by pressing ‘w’. **ArrayList = { ‘w’ }**
- 3) Player two starts moving down by pressing ‘k’. **ArrayList = { ‘w’, ‘k’ }**
- 4) Player one starts moving to the right by pressing ‘d’ (they are now moving diagonally up and to the right). **ArrayList = { ‘w’, ‘k’, ‘d’ }**
- 5) Player two stops moving by releasing ‘k’. **ArrayList = { ‘w’, ‘d’ }**
- 6) Player one stops moving by releasing both keys together. **ArrayList = { }**

At each step along the way you will be checking for each letter you’re interested in, and updating the appropriate variable (“playerOneHozPos”, “playerTwoVertPos”, etc) as appropriate.