

Array of Objects

Recall:

- An array is a collection of data items of the same type.
- An object is considered a type
- Therefore it is possible to have an array of objects!

Consider our class fraction:

```
class fraction  
{  
    int num;  
    int den;  
}
```

The class above defines what the object of type fraction should look like.

To create an instance of this object, we write in our main program:

```
fraction f = new fraction()
```

Now a reference to the location of the newly created fraction is stored in f.

How about arrays?

- Recall:

To declare an array, we could enter

```
int [] m = new int[5];
```

The above creates an array called `m` that holds 5 values of type `int`.

`m[0]` is the integer stored in index 0, `m[1]` is the integer stored in index 1, etc.

What happens when `m[0] = 3`;

Let's create an array that holds
type fraction!

```
fraction [] x = new fraction[5];
```

Creates an array called x that holds 5 values
of type reference to fraction!

Has any instance of fraction been created?

- Remember `x` is an array of fractions, therefore `x[0]` is the fraction stored in index 0.
- To create an instance of fraction stored in `x[0]`, we type:
`x[0] = new fraction();`
- To create an instance of fraction for the rest of the fraction's in array `x`, we type.

`x[1] = new fraction();`

`x[2] = new fraction();`

`x[3] = new fraction();`

`x[4] = new fraction();`

Putting values in our array of objects

- We can now access the objects in our array like any other object.
- Remember that `x[0]` is a reference to the instance of the object `fraction`. Therefore we can access the fields `num` and `den` like so.....

```
x[0].num = 2;
```

```
x[0].den = 3;
```

Think of the possibilities

- With an array of objects:
 - We can now store multiple data types in an array! For example an object of type student could contain the name, student number, and marks!
 - We would probably want our fields (num and den) private, so we will need to access the object through instance methods.
 - If we modify the program later, we need only change the fields of the object class.