ArrayList

ArrayList: Growing and shrinking array

- *declaration*
  ArrayList<String> a;

  equivalent in arrays
  String[] a;

- *creation*
  a = new ArrayList<String>();

  a = new String[...];

- *appending*
  a.add("aap");

  –

- *insertion (elements after i are shifted right)*
  a.add(i, "jet");

  –

- *change (only allowed for existing indices)*
  a.set(0, "AAP");

  a[0] = “AAP”;

- *inspection (only allowed for existing indices)*
  s = a.get(0) + a.get(1);

  a = a[0] + a[1];

- *deletion (elements after i are shifted left)*
  a.remove(i);

  –

ArrayList: more

- *visit all elements*

```
for (String s : a) {
      ... s ...
 }
```

```
for (int i=0; i < a.length; i++) {
     ... a[i] ...
}
```

```
for (String s : a) {
      ... s ...
 }
```

- *number of elements*

  a.size( )

  a.length

- for primitive types (int, double, boolean, …)
  use **Integer**, **D**ouble, **B**oolean:

```
ArrayList<Integer> a;
 a = new ArrayList<Integer>();
```

ArrayList: example

```
import java.util.*; // for Scanner and ArrayList
...
int n;
ArrayList<String> words;
String word;
double totallength = 0;
double averagelength;

words = new ArrayList<String>( );
do {
    word = scanner.next( );
    totallength += word.length( );
    words.add(word);
} while (scanner.hasNext( ));  // doesn't work with keyboard input
// while( !scanner.hasNext("__END__") ) stops when __END__ is encountered

averagelength = totallength / words.size( );

for (String w : words) {
    if (w.length > averagelength) {
        System.out.println(w+" is above average");
    }
}
```

Hu Lang is a Chinese

- `length`
  number of members of an array

- `length()`
  number of characters in a String

- `size()`
  number of members of an ArrayList (and other Collections)