Why arrays are cool

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Contiguous memory structures

- An array is a contiguous region of memory dedicated to storing a group of items
- Lots of times in computer programming, we need to keep track of a group of items

- Here is an array of 9 integers called golfScores

golfScores		
Address	index	value
12000	0	4
12004	1	5
12008	2	4
12012	3	7
12016	4	5
12020	5	3
12024	6	5
12028	7	6
12032	8	2

But how do I create and use an array?

- int[] golfScores = new int[9];
- This command creates a new array of 9 variables
- golfScores[0] = 5; //this sets the first element in the array to 5

- The array starts off with all values initialized to 0

golfScores		
Address	index	value
10000	0	0
10004	1	0
10008	2	0
10012	3	0
10016	4	0
10020	5	0
10024	6	0
10028	7	0
10032	8	0

- Now, we will overwrite the first element with a 5.

golfScores		
Address	index	value
10000	0	5
10004	1	0
10008	2	0
10012	3	0
10016	4	0
10020	5	0
10024	6	0
10028	7	0
10032	8	0

Can’t we use loops with arrays?

- Of course
- Looping and arrays are a powerful combination
- Better than Batman and Robin!
- int i=0;
  while(i<9) {
    golfScores[i] = -1;
    i=i+1;
  }

- Now, we will overwrite all elements with -1

golfScores		
Address	index	value
10000	0	-1
10004	1	-1
10008	2	-1
10012	3	-1
10016	4	-1
10020	5	-1
10024	6	-1
10028	7	-1
10032	8	-1

This is sick, can I create an array of anything else?

- Sure
- Here is an array of 10 appointments:
- String [ ] appts = new String[10];

appts		
Address	index	value
7108	0	“”
7112	1	””
7116	2	“”
7120	3	“”
7124	4	“”
7128	5	“”
7132	6	“”
7136	7	“”
7140	8	“”
7144	9	“”

How do we access any element?

- System.out.println(“Which appointment to change?”);
- int which = input.nextInt();
- appts[which] = input.nextLine();

appts		
Address	index	value
7108	0	“”
7112	1	””
7116	2	“”
7120	3	“”
7124	4	Java class
7128	5	“”
7132	6	“”
7136	7	“”
7140	8	“”
7144	9	“”

But I want to print all the appointments to the screen

- NP
- for(int i=0; i < appts.length; i++)
  {
    System.out.println(i + " " + appts[i]);
  }
- That's it, you're kidding!
- No, I'm not
- Truly Sick!!