Computer Programming: Skills and Concepts
Tutorial 5
Week 7 — Mon, 1st - Thurs, 4th November, 2010

Programming

Write a program that computes the first 100 prime numbers and stores them in an array.

Structured Data

Consider the following code:

```
typedef int mark;

typedef struct {
  int a;
  int *b;
} foobar;

mark x = 2.6;
foobar y;
y.a = x;
y.b = &y.a;
x++;
int z = *y.a;
```

What is the value of `x, y.a, y.b, z` ?

Programming

How would you store a student record, consisting of student id number, first and last name and entry semester in a data structure?

Bubble Sort

Here is the code for a sorting algorithm called bubble sort:

```
void BubbleSort(int a[], int n)
{
   int i, j;
   for (i = n - 1; i >= 1; --i) {
      for (j = 0; j < i; ++j) {
         if (a[j] > a[j+1]) Swap(&a[j], &a[j+1]);
 // CHECKPOINT
      }
   }
}
```

What are the values for `i, j, a[]` for each passing of the checkpoint, if initialized as below in the table:

i	j	a[0]	a[1]	a[2]	a[3]	a[4]
-	-	7	19	2	99	12