Programming

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

Structured Data

Consider the following code:

```c
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:

```c
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]);
        }
    }
}
```

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

```
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>7</td>
<td>19</td>
<td>2</td>
<td>99</td>
<td>12</td>
</tr>
</tbody>
</table>
```

// CHECKPOINT
```