Assessment Report for MCSE Courses

CSCI 1301 Principles of Computer Science I

1. CSCI 1301 Principles of Computer Science I

2. Spring 2011

3. The assessment consisted of 10 multiple-choice questions, given as the first part of the final exam in all CSCI 1301 classes.

4. Expected Educational Results covered by each item:

   • Item #1: Implement a simple abstract data type using the appropriate data constructs and routines.

   • Item #2: Implement a simple abstract data type using the appropriate data constructs and routines.

   • Item #3: Use selection and repetition statements appropriately in a program. Trace through and determine the output of a program containing any or all of the above constructs.

   • Item #4: Use selection and repetition statements appropriately in a program. Trace through and determine the output of a program containing any or all of the above constructs.

   • Item #5: Use selection and repetition statements appropriately in a program. Trace through and determine the output of a program containing any or all of the above constructs.
• Item #6: Use selection and repetition statements appropriately in a program.

• Item #7: Implement a simple abstract data type using the appropriate data constructs and routines.

• Item #8: Use selection and repetition statements appropriately in a program. Understand and demonstrate proper use of specific structured data types, including arrays, vectors and structures, in a program. Trace through and determine the output of a program containing any or all of the above constructs.

• Item #9: Construct a modular, well-structured program in a specified programming language from a top-down design.

• Item #10: Understand and demonstrate proper use of specific structured data types, including arrays, vectors and structures, in a program.

5. For each item on the assessment instrument, the results of the students’ performance.

<table>
<thead>
<tr>
<th>Item</th>
<th>Percent Correct</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>89.3%</td>
</tr>
<tr>
<td>2</td>
<td>78.6%</td>
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<tr>
<td>3</td>
<td>62.5%</td>
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<tr>
<td>4</td>
<td>48.2%</td>
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<tr>
<td>5</td>
<td>94.6%</td>
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<tr>
<td>6</td>
<td>92.9%</td>
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<tr>
<td>7</td>
<td>87.5%</td>
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</tbody>
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6. Overall, the student average of 81% was excellent. On only two items did students score below 70%:
   
   • Item #3, which required students to trace through a program segment using nested if-else conditional statements, was answered correctly by only 63% of the students.
   
   • Item #4, which required students to trace through a program segment using the switch conditional statement with embedded break statements, was answered correctly by only 48% of students. Incorrect answers were spread fairly evenly.

7. These results seem to indicate that students come into Precalculus with arithmetic and algebraic difficulties, such as an understanding of the negative sign, factoring, and solving equations. Those skills should be reviewed at the beginning of the semester and reinforced throughout, but to some extent are beyond the purview of this course.

   The coverage of conditional statements needs to provide more coverage of complex statements as well as simple conditional statements. Instructors should assign problems using nested if-else statements as well as the use of the break; statement embedded in complex switch statements.