2009/2010 G52AIP Exam Feedback

Statistics for each question

For each question, some students obtained full marks. The highest mark this year is 97. More details of each question are given below.

Number of students in each range of marks:

<table>
<thead>
<tr>
<th></th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q5</th>
<th>Q6</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>12</td>
<td>2</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>Max</td>
<td>24</td>
<td>24</td>
<td>22</td>
<td>22</td>
<td>25</td>
<td>25</td>
<td>97</td>
</tr>
<tr>
<td>Average</td>
<td>12.2</td>
<td>14.3</td>
<td>15.8</td>
<td>17.4</td>
<td>15.2</td>
<td>15</td>
<td>57.6</td>
</tr>
</tbody>
</table>

Statistics for marks

<table>
<thead>
<tr>
<th>Mark range</th>
<th>&gt;=80</th>
<th>70-79</th>
<th>50-69</th>
<th>40-49</th>
<th>&lt;40*</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of students</td>
<td>5</td>
<td>5</td>
<td>8</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

* 1 student didn’t attend the exam, therefore marked 0

Q1: Constrained Based Scheduling
a) Most students couldn’t provide the formal definition of all terms, i.e. variables, constraints, and the unary resource constraint.
b) Most students provided a near “perfect” answer, but didn’t provide the constraint and the domain of the new dummy task.

c) Most students didn’t provide the correct definition of the three constraints.

d) Most students “translate” the rule following the Mathematic expression, but couldn’t explain the rule in English, as required. Some students provided the wrong answer, i.e. A should be processed last, etc.

**Q2: Arc Consistency**

a) Most students knew that path consistency is correlated with arc consistency, but couldn’t explain what it exactly means. Some students don’t show to understand what “k-consistency” means.

b) Most students didn’t provide all details of these two AC algorithms.

c) Only a small portion of students provided a right answer to this question.

**Q3: Search and Propagation**

a) Most students correctly pointed that Depth-first search is more efficient, but some did not explain the detail of the reasons.

b) Most students answered this problem quite well.

c) Most students answered this question well, some seem not fully understand terms such as “size of the domain” or “number of constraints”.

d) Most students answered this question very well, providing the correct code for AC-1.

**Q4: Defining n-Queen as CSP**

a) Most students obtained a high mark for this question; some students didn’t calculate the correct size of the search space.

b) For this question, students knew that smaller search size is better, but some students can’t provide a detailed explanation.

c) Only a small portion of students obtained a full mark for this question.

**Q5: Ordering**

a) Many students provided the definition of Bandwidth, not Width of node as required here.

b) Most students provided a correct heuristic, and a correct example for this question.

c) For the first sub-question, some students couldn’t provide the pseudo-code of the max-cardinality ordering algorithm;

For the third sub-question, students knew that max-cardinality ordering is for efficient search, but did not explain why in details.

In the second sub-question, there was a typo, i.e. “graph shown above” instead of “graph shown below”, leading to some confusion. Therefore the marking scheme has been adjusted to provide a fair assessment to those affected.

Most students answered this sub-question based on the graph above, or by creating their own graph. In both cases, marks have been awarded accordingly without any problem, as this sub-question is not linked with the other two sub-questions.

Four of students attempted, but couldn’t answer this sub-question, thus have been marked using the adjusted marking scheme:

Based on the answers to the overall question 5(c), I’ve scaled up the mark students obtained to 5(c) into 16% of the overall exam. For example,

- if the student didn’t answer this specific question (6 marks), but obtained 12 marks for the other parts (the highest mark for the overall 5(c) without these 6 marks), his/her mark will be scaled up to 16 (the original total mark for 5(c));

- similarly, if the student obtained 9 marks in the overall 5(c), his/her mark will be scaled up to 9 / 12 * 16 = 12; if the student obtained 6 marks in the overall 5(c), his/her mark will be scaled up to 6 / 12 * 16 = 8, etc

This way the four students won’t be penalized to lose these 6 marks, but their mark will be scaled up to 16%, the same as those who have fully answered this question.

**Q6: COP**

a) Most students didn’t provide the key word “maps from a solution to a numeric value”.

b) The heuristic is used to estimate the lower or upper bound values of compound values of partial solution, most students couldn’t provide this in their answers.

c) The key point of this problem is that Min-conflict heuristic randomly assigns values to the variables in conflict and tries to minimize the value. Students who mentioned these two points are awarded full marks.
d) Students who correctly pointed out that good modelling can reduce the time searching for solutions are awarded full marks.