Directions: You are develop an integrated workcell using a Micrologix 1100 as the supervisory control for the solution. Teams of 3-4 students will work independently applying concepts learned in the ITEC 427 course, as well as, those concepts (prerequisite knowledge) learned prior.

Each team must incorporate the following technology to move provided wooden blocks from one end of the lab bench to the other:

- Mitsubishi SCARA industrial robots (Q=2, may not move location of robots)
- Continuously running small conveyor (Q=1, may not stop the conveyor)
- Sharp IR sensors (Q = unlimited) – wired to the PLC
- Allen Bradley Micrologix 1100 with 2-channel analog module (Q=1)
  - PLC is expected to will be the supervisory control for the work cell including the start-up of servo drives and robot signal(s)/operation.
- Cognex Micro Vision System (integrated to the industrial robots – must use at least one system for sorting M and U designated blocks (object recognition)
- Stack lights (Red, Amber, Green) (Q=2) – controlled via PLC
- Custom fabricated parts for coupling/decoupling techniques
- If one uses vision for active compliance in addition to part recognition, 15% bonus will be added if successful in the implementation (>75% accuracy)

Grading Rubric:

<table>
<thead>
<tr>
<th>Documentation</th>
<th>50%*</th>
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<tbody>
<tr>
<td>Performance</td>
<td>50%**</td>
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*Documentation must include detailed description of what each team member has contributed. Final project grade may be reduced based on lack of participation.

**Performance score with equate to % of successful consecutive 20 runs.