

Pre-competition Tasks

Industrial Control Competition

WorldSkills UK Skills Competition

The equipment required: Laptop with TIA Portal, Simatic HMI and Simatic S7-1200.

The tasks can be completed individually or in a team of two, please be aware during the competition you will be working in teams of two.

1. Write a program to count a variable up to a target value and back to zero continuously. The target value should be changeable from elsewhere (*5 marks*).
2. Use a watch table to monitor the ramping variable and to change the target value (*3 marks*).
3. Use a cyclic interrupt block to reset the ramping variable to zero, for example once every minute (*3 marks*).
4. Visualise the ramping variable on an HMI in three ways:
 - First, animate an object so it moves diagonally across the screen. The start and end points should allow for the object to stay on the screen (*5 marks*).
 - Second, use a bar graph without scale/limit markings to show the ramping variable. Superimpose the bar graph on a tank object from the symbol library. Create a switch that stops/starts filling (*3 marks*).
 - Third, display the ramping variable on a Trend View
 - Next to the trend, use an I/O Field to alter the target value (*3 marks*)

Total 22 marks

The tasks should take approximately 5 hours to complete.

Please turn over to find the marking schedule for the above tasks.

College/ Training Provider: _____

Use a cyclic interrupt block to reset the ramping variable to zero, for example once every minute	Mark
Marking criteria (possible mark shown in brackets)	
Research, understanding of cyclic interrupt (2)	
Creation of interrupt and programming (1)	
Total (Max 3)	
Write a program to count a variable up to a target value and back to zero continuously The target value should be changeable from elsewhere	Mark
Marking criteria (possible mark shown in brackets)	
Accurate programming, use of variables (3)	
Establishing connection and downloading to PLC (1)	
Monitoring and checking operation (1)	
Total (Max 5)	
Use a watch table to monitor the ramping variable and to change the target value	Mark
Marking criteria (possible mark shown in brackets)	
Creation of Watch Table (1)	
Monitoring and modification of target variable (2)	
Total (Max 3)	

Assessor's Name & Signature:

Final Score (22 max):

Competitor's Name:

Visualise the ramping variable on an HMI in three ways:	Mark
<ul style="list-style-type: none"> First, animate an object so it moves diagonally across the screen. The start and end points should allow for the object to stay on the screen 	
Marking criteria (possible mark shown in brackets)	
Successful connection of HMI to PLC (network and logical connection) (3)	
Creation and animation of an object (2)	
<ul style="list-style-type: none"> Second, use a bar graph without scale/limit markings to show the ramping variable. Superimpose the bar graph on a tank object from the symbol library. Create a switch that stops/starts filling 	Mark
Creation of Tank/Bar graph object (1)	
Attaching tag variable to bar graph (1)	
Creation of start/stop variable and switch (1)	
Third, display the ramping variable on a Trend View. Next to the trend, use an I/O Field to alter the target value	Mark
Creation of Trend View and use of navigation on screens (1)	
Attaching tag variable to trend (1)	
Creation and use of I/O field (1)	
Total (Max 11)	