MECHENG 709/710 - Assignment (2024)
Group 1

The main aim of this part of the assignment is to help you understand some of the basic elements in a set of OPC UA Python codes, including address space and namespace that make up an important part of an OPC UA information model.

Practice questions (not marked)

To answer the following three questions, you have to study, understand and run the given example server and client codes in the "e*xample codes"* folder (*example_server.py & example_client.py).* They can be found on Canvas. Assume you initialise the server before starting the client.

1. What is the endpoint URL for the server, and what is the endpoint URL for the client?
`opc.tcp://localhost:5001 server and client`

2. What is the root node ID for the server?
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3. What are the browse names, default values, and node IDs for the following two assigned variables?

Python Variables	Browse name	Default value	Node ID
Sensor_name	Sensor Name	Temperature_Sensor_SF12	ns=2;i=2
Temperature	Temperature Value	NA	ns=2;i=3

Questions related to the assignment codes (4 marks)

These questions are based on codes, *Company1_Client.py* and *Company2_Client.py.*

1. Below is a collation of the device tags, browse names and NodeID extracted from OPC UA server under Node Class or Node Class variable. Fill the vacant cells in the table. (2 marks)
If needed, consult *[section 2.2 Nodes and References Book of OPC Unified Architecture]*

No.	Variable Name (client 1)	Browse Name	Node ID
1	Equipment_ID1	Equipment_ID	ns=2;i=2
2	Equipment_ID2	Equipment_ID	ns=2; i=3
3	Equipment_ID3	Equipment_ID	ns=2; i=4
4	time_left_conveyor	remaining_con	ns=2;j=5
5	time_left_kuka	remaining_con	ns=2;j=6
6	time_left_Lathe	remaining_con	ns=2;j=7
7	current_time	Time Stamp	ns=2;j=9
8	Kuka_operation	Current Operation	ns=2;j=10
9	Lathe_operation	Current Operation	ns=2;j=11
10	WorkpieceID	WorkpieceID	ns=2;j=12
11	Conveyor_Status	Status_con	ns=2;j=13
12	Kuka_Status	Status_Kuka	ns=2;j=14
13	Lathe_Status	Status_Lathe	ns=2;j=15
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2. Fill the vacant cells in the table below based on client codes 1 & 2. Below is a collation of the callable method names, browse names and NodeID extracted from OPC UA server under Node Class object. (Some details may not be applicable) (2 marks)

If needed, consult *[section 2.2 Nodes and References Book of OPC Unified Architecture]*

No.	Callable Methods (both clients)	Browse Name	Node ID	Function Name	Argument
1	Start_Conveyor_prog	Conveyor	ns=1;i=2001	Start_Conveyor_prog	Current_operation
2	Start_Lathe_Prog1	Lathe_Prog1	ns=1;i=2002	Start_Lathe_Prog1	N/A
3	Start_Lathe_Prog2	Lathe_Prog2	ns=1;i=2003	Start_Lathe_Prog2	N/A
4	Start_Kuka_Prog1	Kuka_Prog1	ns=1;i=2004	Start_Kuka_Prog1	N/A
5	Start_Kuka_Prog2	Kuka_Prog2	ns=1;i=2005	Start_Kuka_Prog2	N/A