CT103: Week 9 Lab Session (23/11/2021)

Note: This assignment will count towards your final grade.
*Make sure you submit your solution by following the "**Submission Instructions**" at the end of this document. You have **until 6pm Tuesday 23/11/2021 to submit your solution on Blackboard**.*
Late assignment submissions will receive a penalty.

Please make sure you **write comments** explaining what your code does. Start your C program with a **comment stating your; Name, Student ID and Date**.

Write a C program that does the following:

1. Write a function to read in the time. This function accepts no parameters. This function should ask the user to enter the current hour and then ask for the current minute. You should then convert these into a single float called "time". E.g. if the user enters: Hours = 14, Minutes = 30 -> "time" = 14.5. Your function must return "time". Call this function in main(). (**20 marks**)
    a. Note: You must check if the hours and minutes entered by the user are correct, i.e. hours are between 0 and 24, minutes are between 0 and 60.
    b. If either are outside these ranges, reset to nearest acceptable value.

2. Create a new function that accepts the time as a parameter. This function must **round up** the time to the nearest hour. The function must then return the new rounded time. Call this function in main(). (**20 marks**)

3. Create two global variables or constants called "dayRate" and "nightRate". These represent the electricity price during the day and night, and should have the values: dayRate = 23.9 c/kWh, nightRate = 12.6 c/kWh. (**20 marks**)

4. Create a new function that accepts the time as a parameter. This function must use a conditional operator to set the electricity price to the day or night rate depending on the time. The night rate is: from midnight until 8am. The day rate is: from 8am to midnight. The electricity price must be returned by the function. Call the function in main() and pass in the rounded up time. (**20 marks**)

5. Write a final function that accepts the time and price as parameters. This function should not return anything. This function must print the price and the time to the screen. Call this function in main (). (**20 marks**)

Your program should output something similar to the following screenshot. You must **upload a single screenshot** showing your program working for each of the requirements in tasks 1 – 5 above. It should look similar to this screenshot. Use different values to those in this screenshot.

Microsoft Visual Studio Debug Console

```
Please enter the current hour:16
Please enter the current minute:13
Time = 16.22.
Time = 17.00.
Electricity price at time 17.00 is 23.90 c/kWh.
```

Plagiarism Notice:

A definition of plagiarism is passing off the work of another personas one's own.

You are allowed to ask the lab tutors for help, collaborate with your classmates and review online and print resources for high-level problem solving and background research. You are each expected to complete this assignment individually. This means that every line of code and comment in your submission should be written by you alone. Please see the NUI Galway Code of Practice for Dealing with Plagiarism for further information on plagiarism: https://www.nuigalway.ie/plagiarism/

Plagiarism is a serious academic offence and may lead to a loss of some or all marks and/or disciplinary proceedings if it is detected in any of your submissions. Students who facilitate others to copy their work are also subject to plagiarism sanctions (including loss of marks), so you should not share your assignment solutions with classmates.

Submission Instructions:

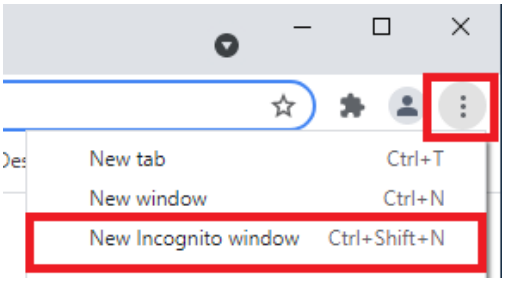
Please do the following to submit your solutions to the assignment.

- Copy and paste your code into a word document labelled 'AssignmentX_YOURNAME_ID.doc', e.g. 'Assignment6_JoeBloggs_123456789.doc'.
- Make sure to **include screenshots showing your code working** in the .doc file. Use: 'Windows' + 'Shift' + 'S' on your keyboard. On a Mac, you should use the keys: 'shift' + 'command' + '3' or 'shift' + 'command' + '4'.
- Add both: **your .c program and your .doc files** to a folder called 'AssignmentX_YOURNAME_ID_Submission'.
- Zip the folder up and **submit the .zip file on blackboard** under CT103 Assessments. To zip the folder, right click and press 'Send To' then 'Compressed (zipped) folder'. On Mac, right click the folder and press 'Compress'.
- You can access blackboard using the instructions at the bottom of the page.
- If for some reason you still cannot access blackboard. Send your .zip folder to the lab instructors by email.

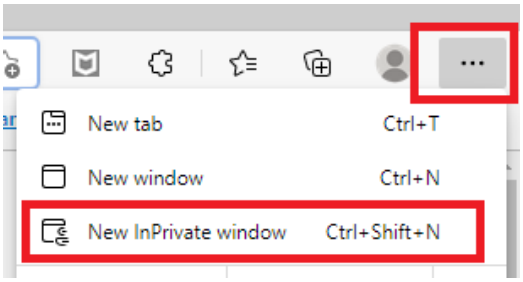
Instructions on how to access to Blackboard.

This is a temporary method of access to Blackboard to work-around access issues arising from the ongoing Security Incident

1. Open a browser window in Incognito/InPrivate mode



Chrome Incognito

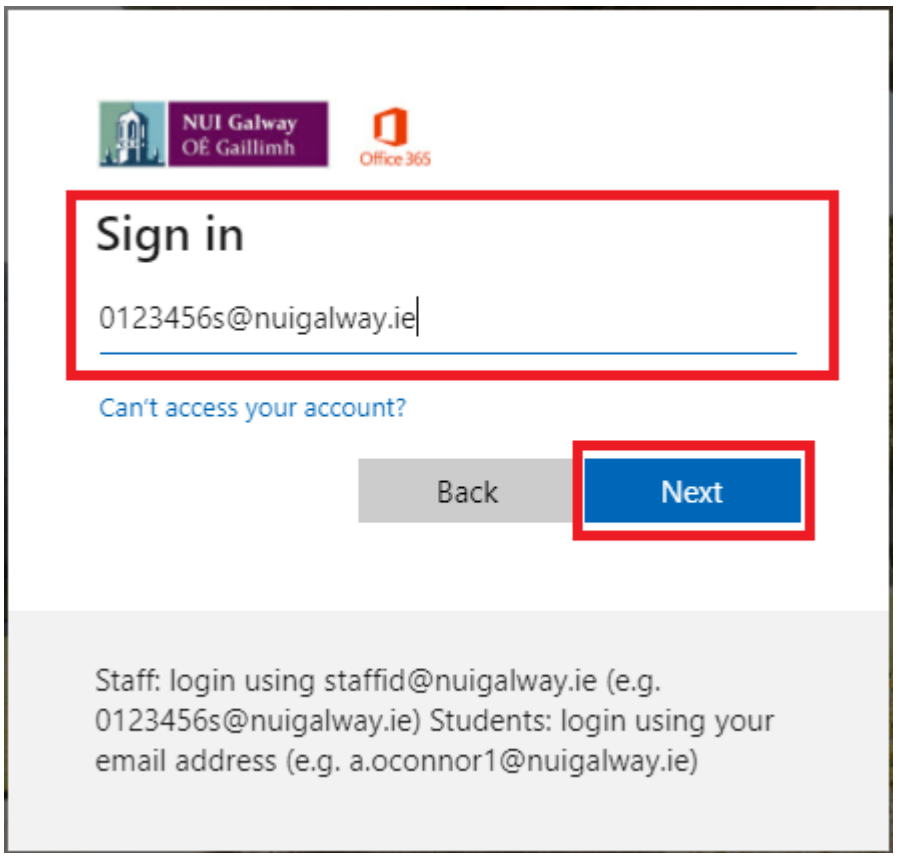


Microsoft Edge InPrivate

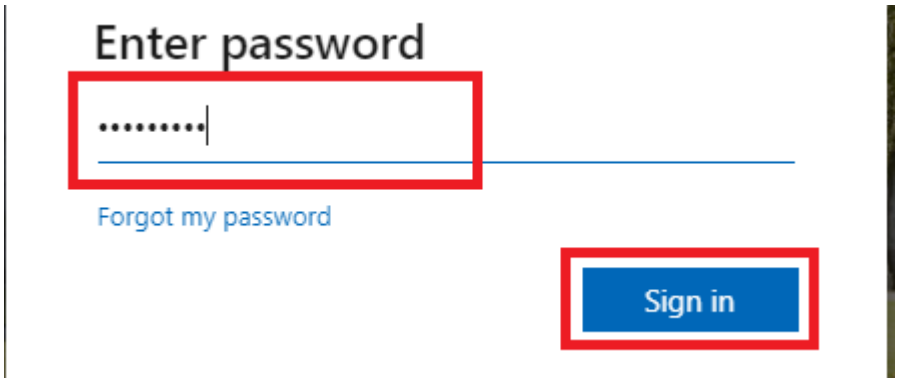
2. Go to https://nuigalway.blackboard.com/

3. Click the “Sign in with a third-party account” drop down and select the appropriate Blackboard SSO option. Staff select “Blackboard SSO Staff”. Students select “Blackboard SSO Student”

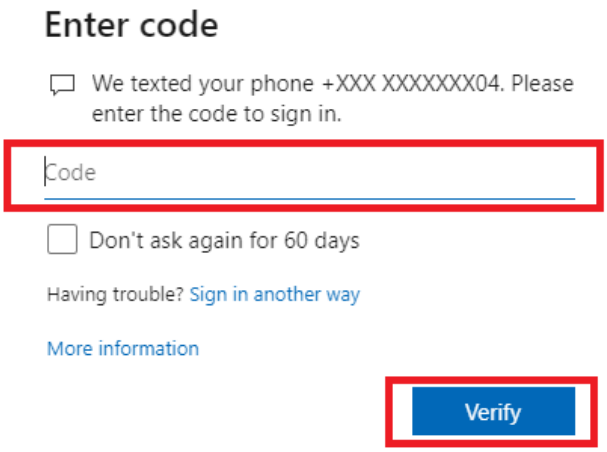
4. You will be directed to the University Office365 login page. Enter your O365 login details and click “Next”. Staff: login using staffid@nuigalway.ie (e.g. 0123456s@nuigalway.ie) Students: login using your email address (e.g. a.oconnor1@nuigalway.ie)



5. Enter your password and click "Sign in"



6. If your O365 account uses Multi Factor Authentication (MFA) you will be texted a code. Enter the code and click "Verify"



7. On the “Stay signed in” page click “Yes”. You will then be logged into your Blackboard account