



UNIVERSITY OF
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Department of
Engineering

Google Colab Meets AI & What's Next?

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Python Notebooks

Text with Python to write/run

Runs in a browser

Shown here in Google Colab

Commands

+ Code + Text

▶ Run all ▼

Copy to Drive

Exercise 03.1

Compare the computed values of

$$d_0 = a \cdot b + a \cdot c$$

and

$$d_1 = a \cdot (b + c)$$

when $a = 100$, $b = 0.1$ and $c = 0.2$. Store d_0 in the variable `d0` and d_1 in the variable `d1`.

Try checking for equality, e.g. `print(d0 == d1)`.

```
[ ] a = ...
    b = ...
    c = ...

    d0 = ...
    print(d0)

    d1 = ...
    print(d1)

    print(d0 == d1)
```

```
[ ] ## tests ##
    assert d0 == 30.0
    assert d1 != 30.0
```

Google Colab AI

Fairly accurate code suggestion

Can turn off per account, but *not* per cohort!

Exercise 02.1 (if-else)

Consider the following assessment criteria which map a score out of 100 to an assessment grade:

Grade	Raw score (/100)
Excellent	≥ 85
Very good	≥ 76.5 and < 85
Good	≥ 64 and < 76.5
Need Improvement	≥ 40 and < 64
Did you try?	< 40

Write a program that, given an a score, prints the appropriate grade. Print an error message if the in zero.

```
# Score from user
score = 72

if score >= 85:
    grade = "Excellent"
elif score >= 76.5:
    grade = "Very good"
elif score >= 64:
    grade = "Good"
elif score >= 40:
    grade = "Need improvement"
else:
    ...
```

Jupyter Lab

Also browser based

AI interaction tricky (useful here!) as

- Specific installation required
- Typically slow

Exercise 03.1

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Try checking for equality, e.g. `print(d0 == d1)`.

```
[ ]: a = ...  
     b = ...  
     c = ...  
  
     d0 = ...  
     print(d0)  
  
     d1 = ...  
     print(d1)  
  
     print(d0 == d1)
```

Jupyter Lab

Options & Challenges

- Install locally on student's device
 - Relatively technical
 - Being prototyped in CUED for IA cohort
- Hosted centrally - JupyterHub
 - Needs IT support
 - Easiest if not linked with user filespace
 - i.e. students upload/download files
 - Being prototyped in CUED for an MPhil project
- Let me know if you'd like me to share results
- Or, if you've already solved this!

- To date:
 - “don’t use AI code generation”
 - Students *claim* they don’t
- AI Code Generation has its place
 - Boiler plate code
 - Speeding up development
 - Learning new paradigms

What’s Next?

Teaching AI Code Generation

- But... challenges
 - It can distract from learning
 - Is the code correct?
 - Does it infringe copyright/patents?
 - Environmental cost
- Considering lab/coursework to explore this critically

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17th September 2025