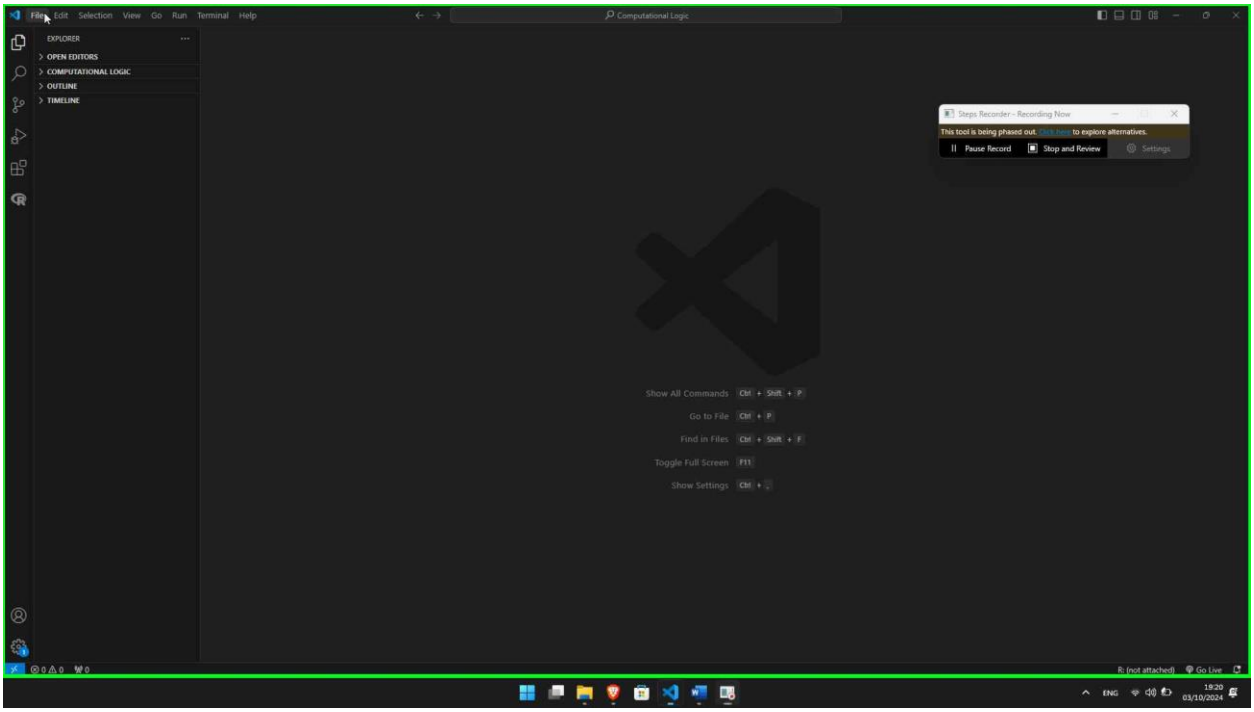
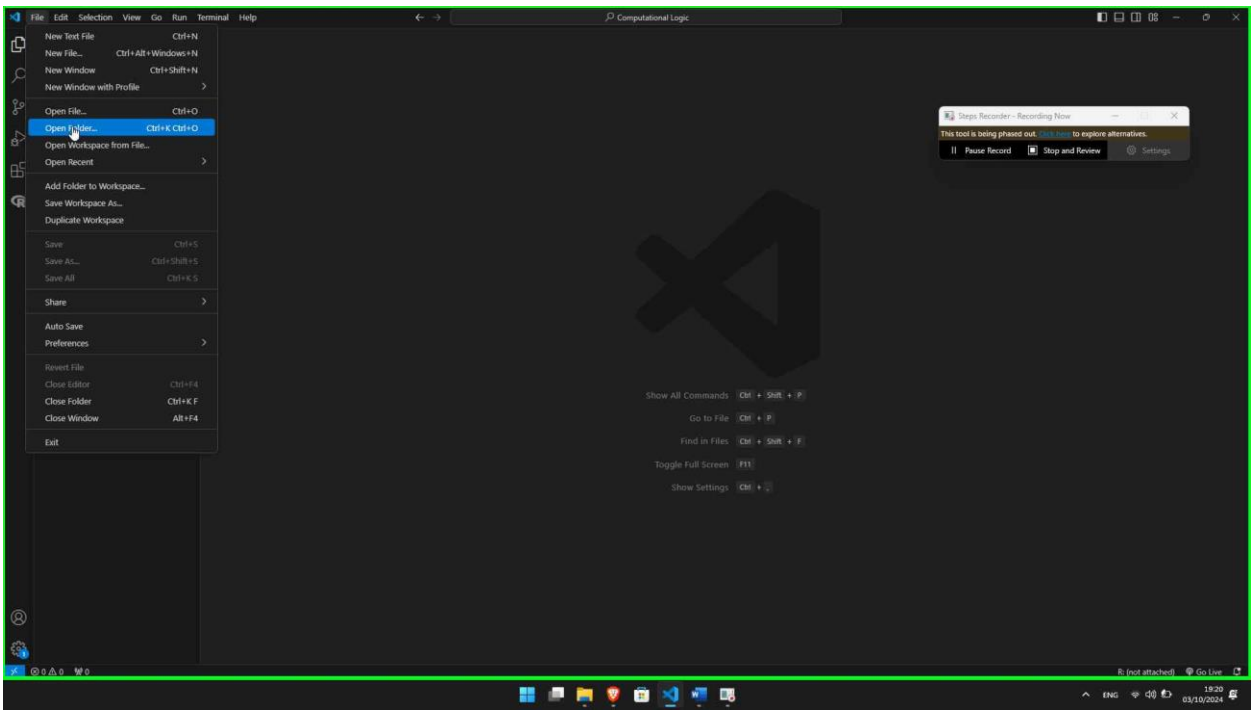
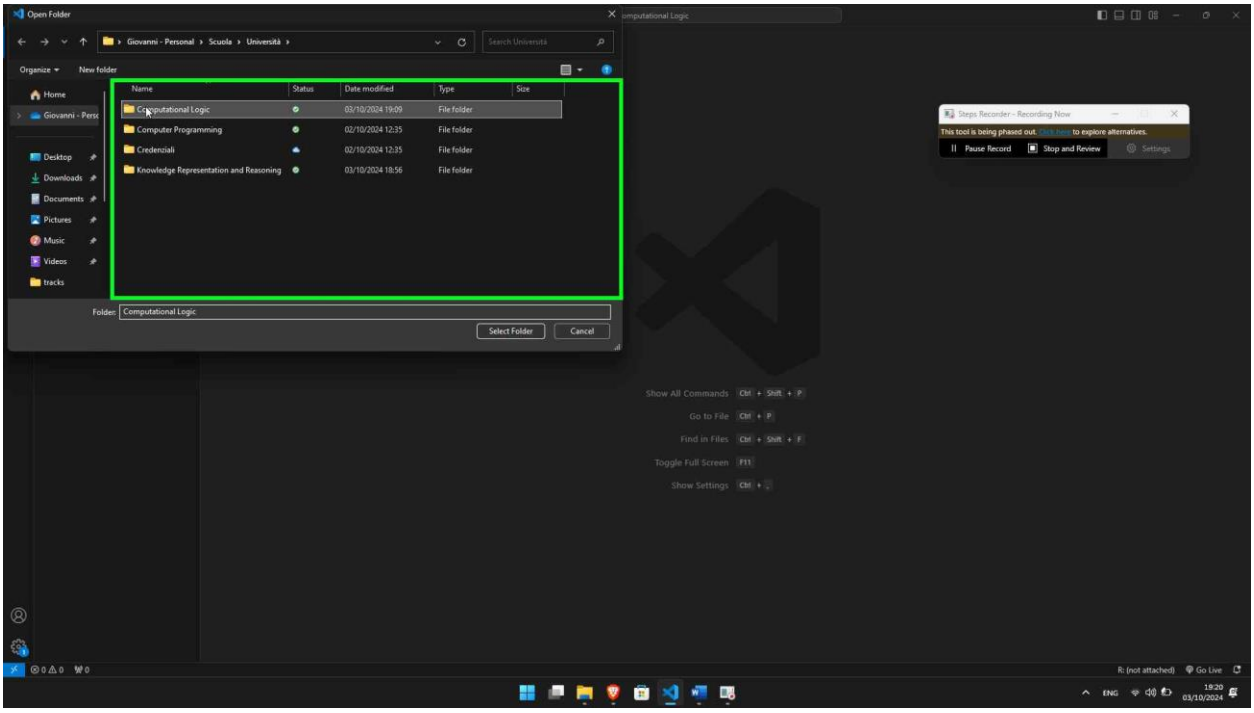
Using Z3 in Visual Studio Code:

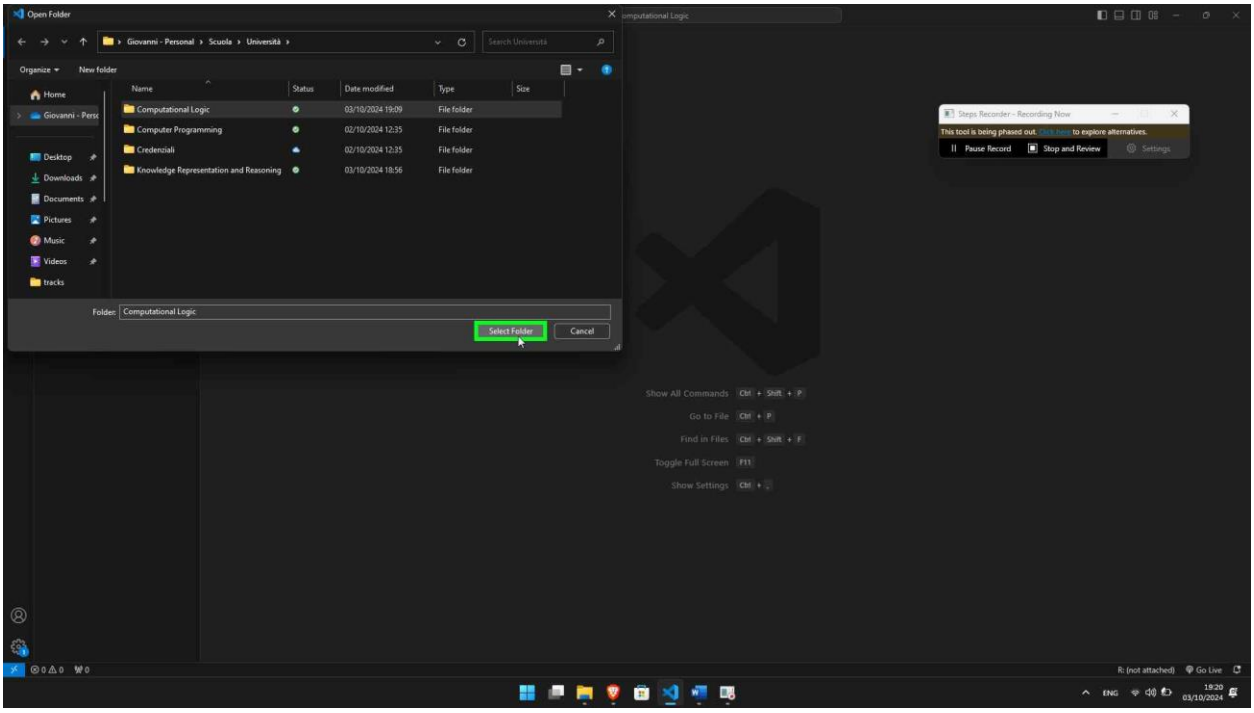
1. Open Visual Studio Code (if not installed download it at https://code.visualstudio.com/download)

2. Open (or create then open) your *Computational Logic* folder:
   Go to *File* > *Open Folder* > select your folder

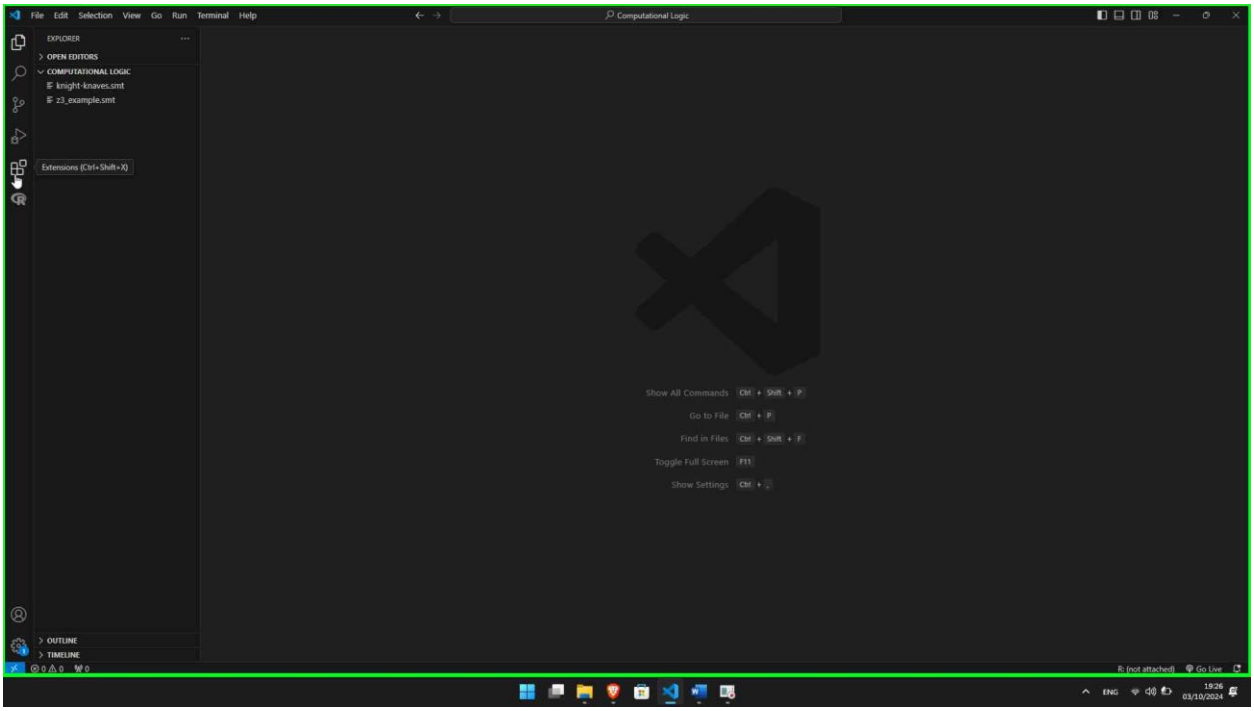


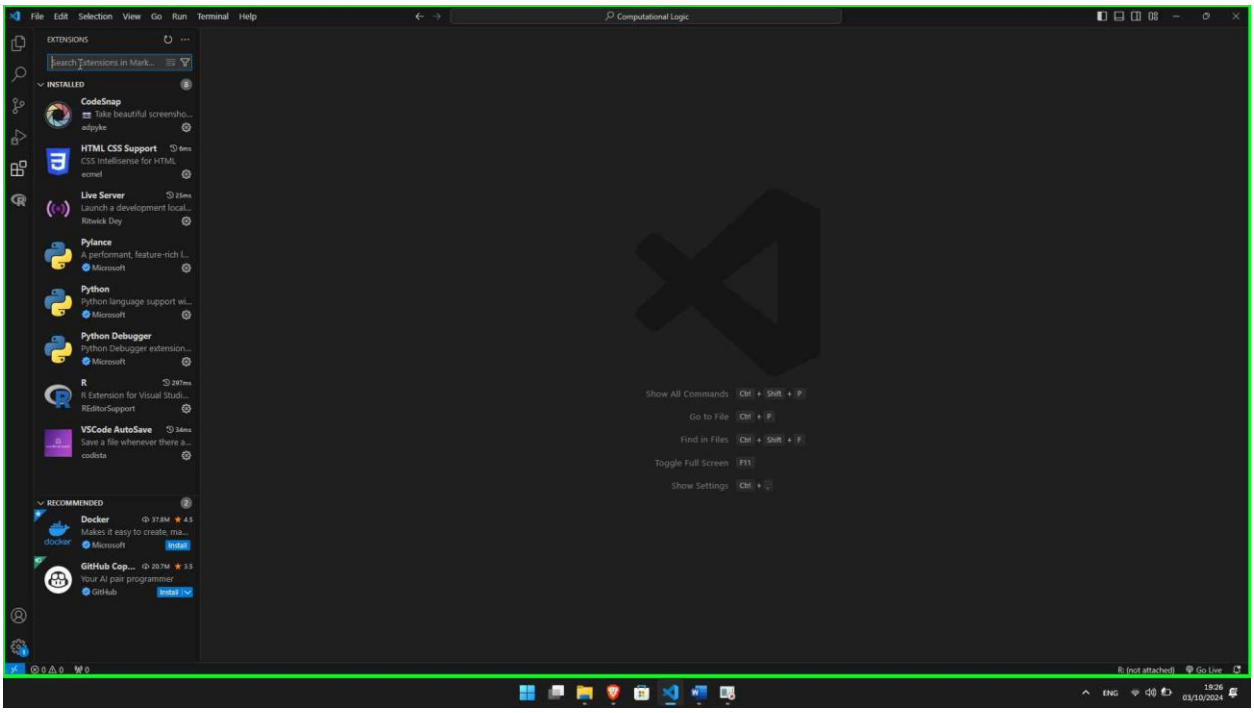

File Edit Selection View Go Run Terminal Help
Computational Logic
New Text File Ctrl+N
New File... Ctrl+Alt+Windows+N
New Window Ctrl+Shift+N
New Window with Profile
Open File... Ctrl+O
Open Folder... Ctrl+K Ctrl+O
Open Workspace from File...
Open Recent
Add Folder to Workspace...
Save Workspace As...
Duplicate Workspace
Save Ctrl+S
Save As... Ctrl+Shift+S
Save All Ctrl+K S
Share
Auto Save
Preferences
Revert File
Close Editor Ctrl+F4
Close Folder Ctrl+K F
Close Window Alt+F4
Exit
Steps Recorder - Recording Now
This tool is being phased out. Click here to explore alternatives.
Pause Record
Stop and Review
Settings
Show All Commands Ctrl + Shift + P
Go to File Ctrl + P
Find in Files Ctrl + Shift + F
Toggle Full Screen F11
Show Settings Ctrl + ,
R: (not attached)
Go Live
ENG
19:20
03/10/2024

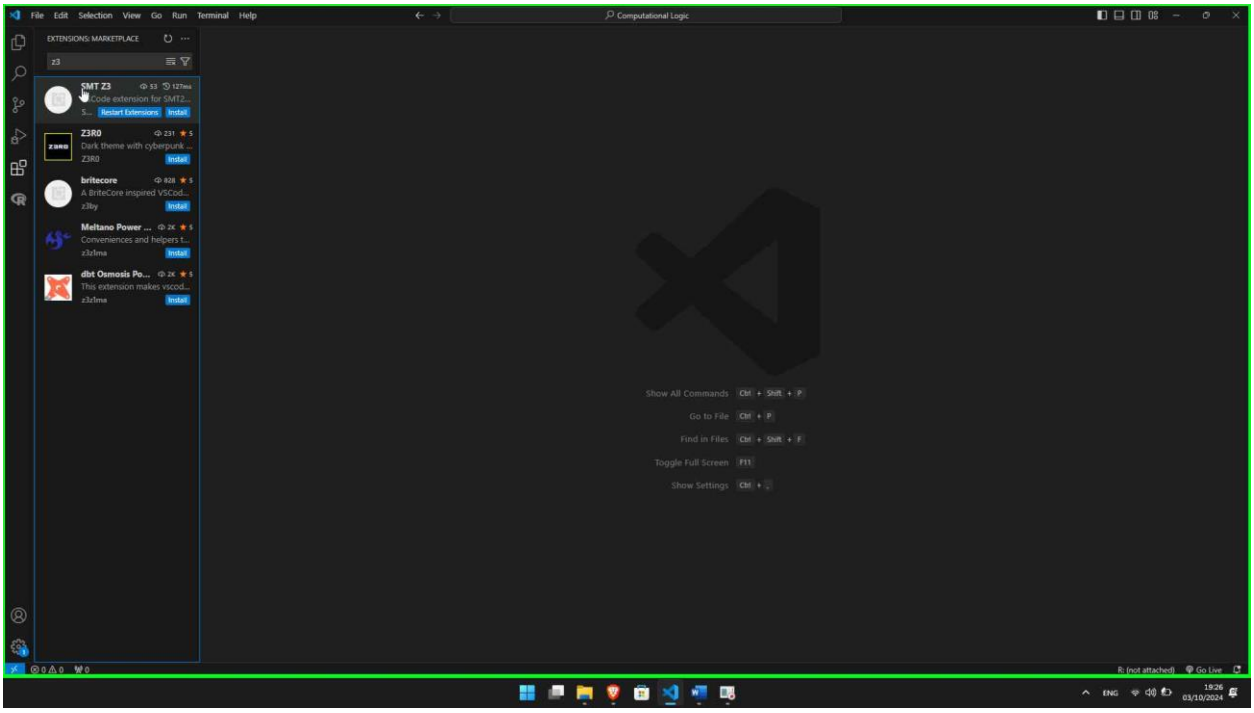

Open Folder
Giovanni - Personal › Scuola › Università ›
Search Università
Organize
New folder
Home
Desktop
Downloads
Documents
Pictures
Music
Videos
tracks
Name
Status
Date modified
Type
Size
Computational Logic 03/10/2024 19:09 File folder
Computer Programming 02/10/2024 12:35 File folder
Credenziali 02/10/2024 12:35 File folder
Knowledge Representation and Reasoning 03/10/2024 18:56 File folder
Folder: Computational Logic
Select Folder
Cancel
Steps Recorder - Recording Now
This tool is being phased out. Click here to explore alternatives.
Pause Record
Stop and Review
Settings
Show All Commands Ctrl + Shift + P
Go to File Ctrl + P
Find in Files Ctrl + Shift + F
Toggle Full Screen F11
Show Settings Ctrl + ,
R: (not attached)
Go Live
ENG
19:20
03/10/2024

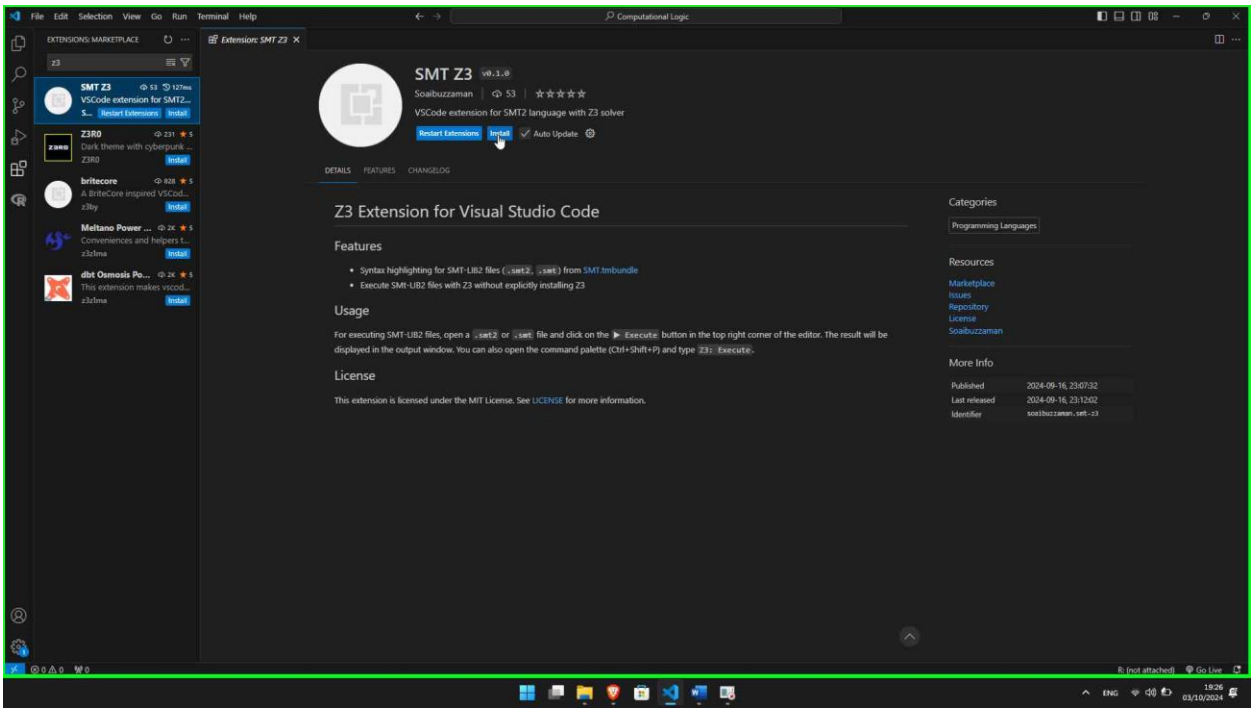


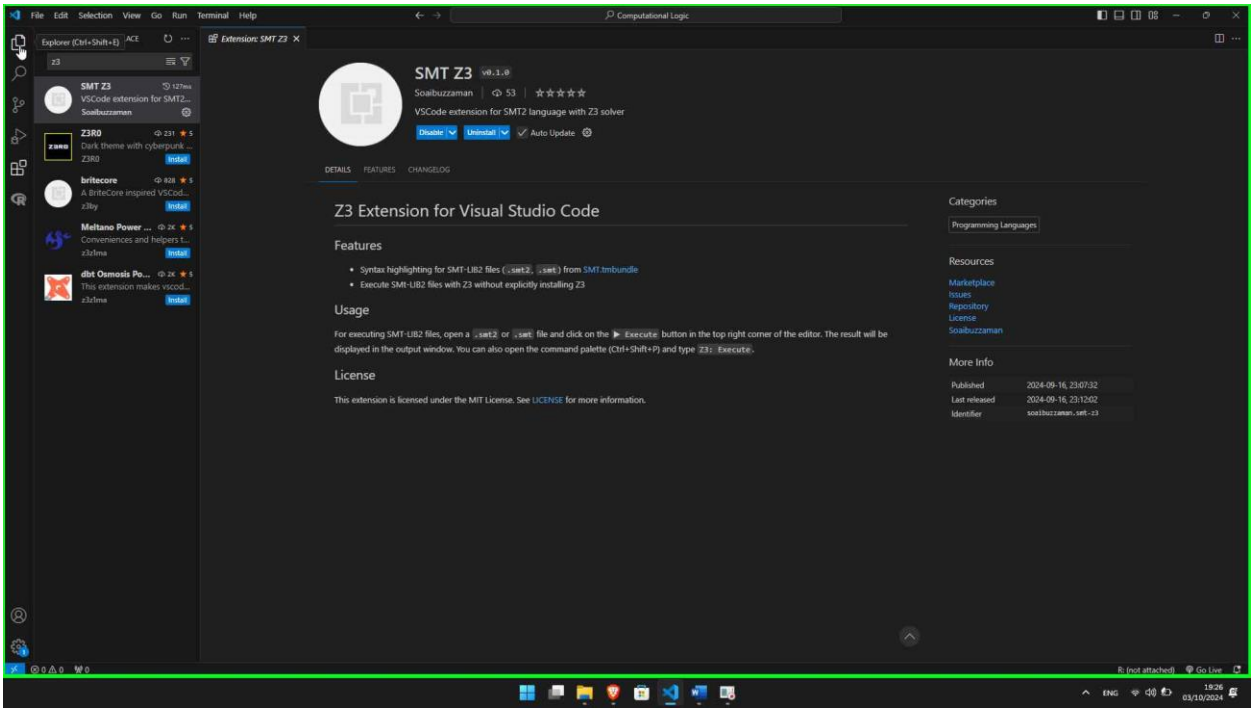
3. Install z3 extension in VS Code:
   Click on *Extensions* > search "*z3*" > select "*SMT Z3*" > click *Install* > return to *Esplorer*




File Edit Selection View Go Run Terminal Help
Computational Logic
EXTENSIONS
Search Extensions in Mark...
INSTALLED
CodeSnap
Take beautiful screensho...
adpyke
HTML CSS Support
CSS Intellisense for HTML
ecmel
Live Server
Launch a development local...
Ritwick Dey
Pylance
A performant, feature-rich l...
Microsoft
Python
Python language support wi...
Microsoft
Python Debugger
Python Debugger extension...
Microsoft
R
R Extension for Visual Studi...
REditorSupport
VSCode AutoSave
Save a file whenever there a...
codsta
RECOMMENDED
Docker
Makes it easy to create, ma...
Microsoft
Install
GitHub Cop...
Your AI pair programmer
GitHub
Install
Show All Commands Ctrl + Shift + P
Go to File Ctrl + P
Find in Files Ctrl + Shift + F
Toggle Full Screen F11
Show Settings Ctrl + ,
R: (not attached)
Go Live
ENG
19:26
03/10/2024

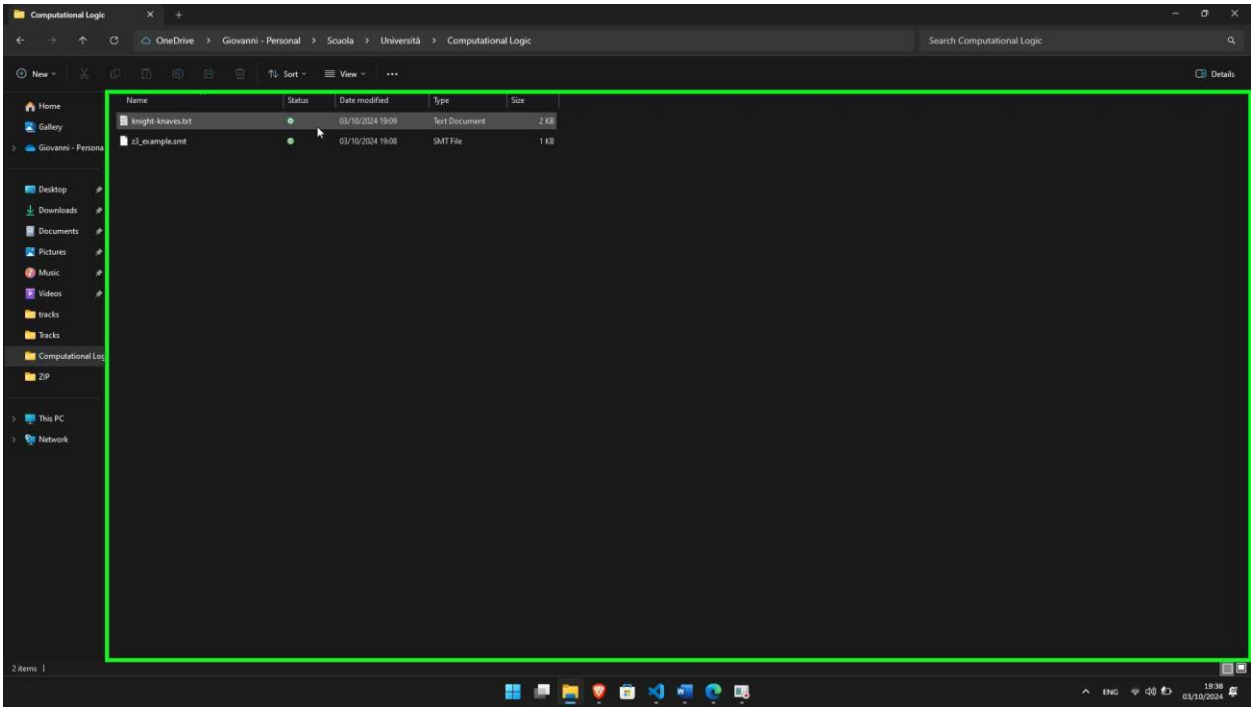

File Edit Selection View Go Run Terminal Help
Computational Logic
EXTENSIONS: MARKETPLACE
z3
SMT Z3
Code extension for SMT2...
Restart Extensions
Install
Z3R0
Dark theme with cyberpunk ...
Z3R0
Install
britecore
A BriteCore inspired VSCod...
z3by
Install
Meltano Power ...
Conveniences and helpers t...
z3z1ma
Install
dbt Osmosis Po...
This extension makes vscod...
z3z1ma
Install
Show All Commands Ctrl + Shift + P
Go to File Ctrl + P
Find in Files Ctrl + Shift + F
Toggle Full Screen F11
Show Settings Ctrl + ,
R: (not attached)
Go Live
ENG
19:26
03/10/2024

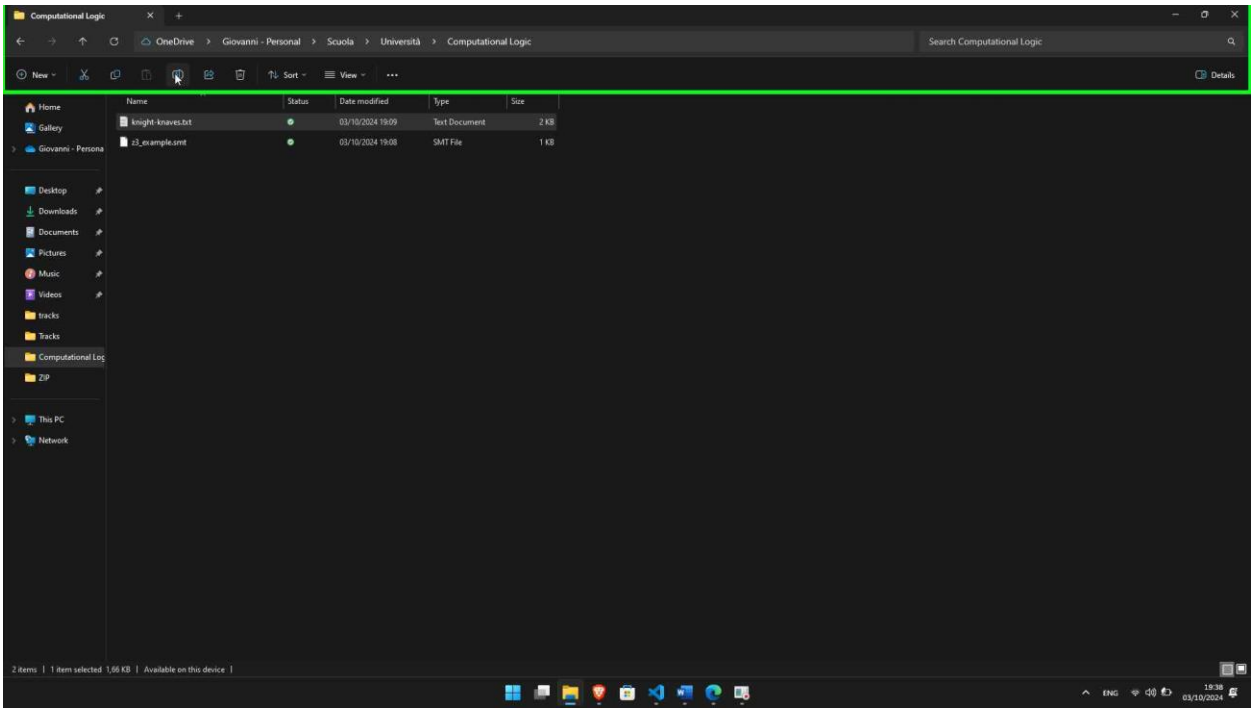


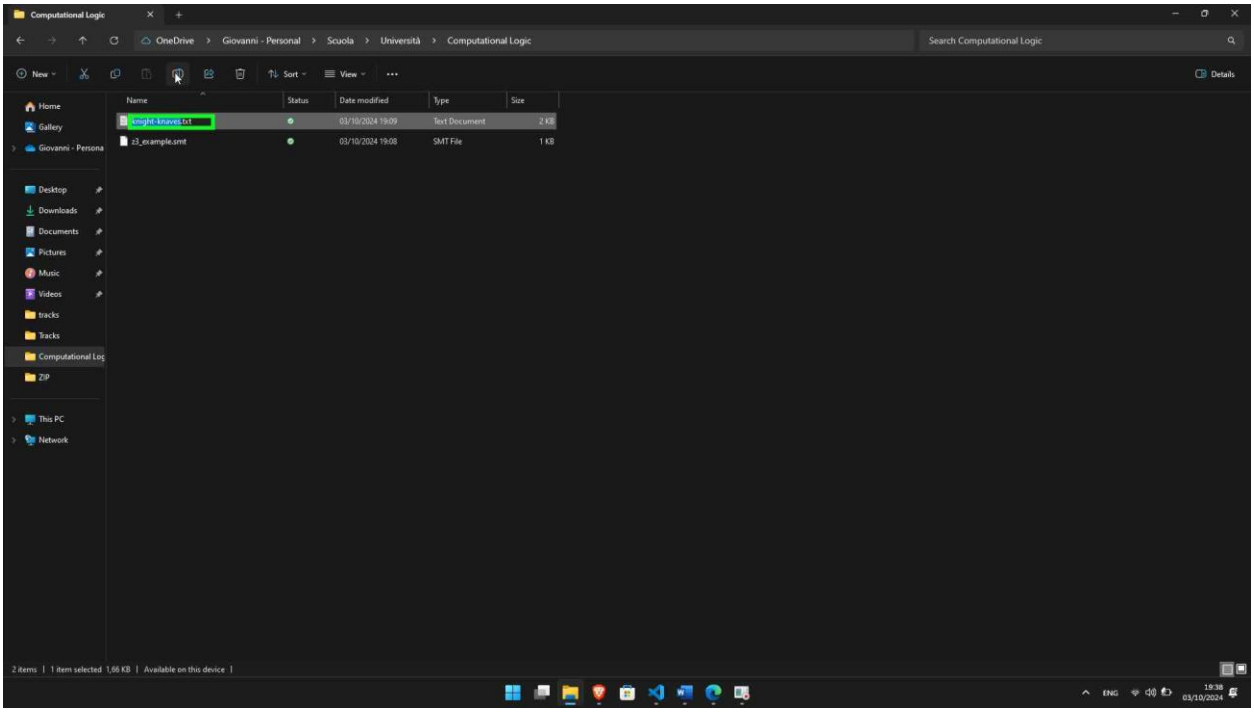


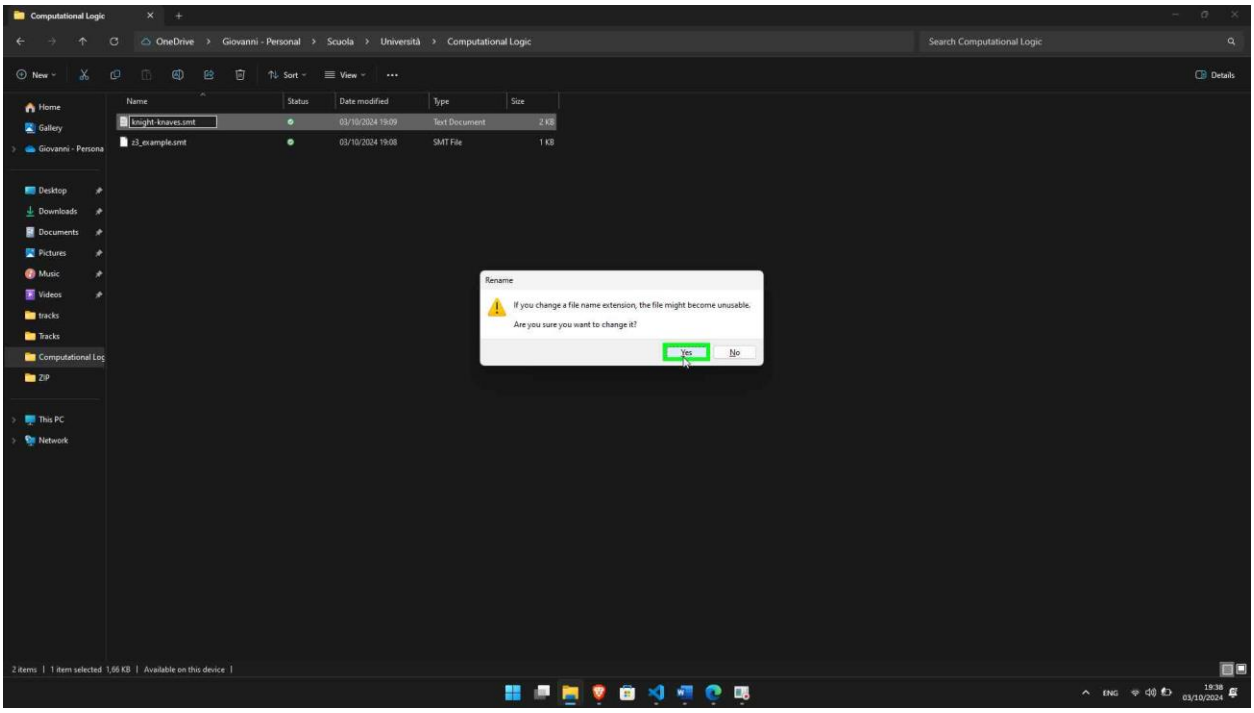
4. Close SMT Z3 extension Tab

5. Download from GDrive one or more examples given by Prof. Silvio Ghilardi
   Exercises > *basic_material* > *Examples*
   (save them in your *Computational Logic* folder)
6. Change every file extension from *.txt* to *.smt*
   Cannot see file extensions? Follow these steps:
   1. Windows 10: https://www.youtube.com/watch?v=-Rxh0Y-fEKk
   2. Windows 11: https://www.youtube.com/watch?v=xQa140S8JIQ
   3. MacOS: https://www.youtube.com/watch?v=AVC9i6zP8L0



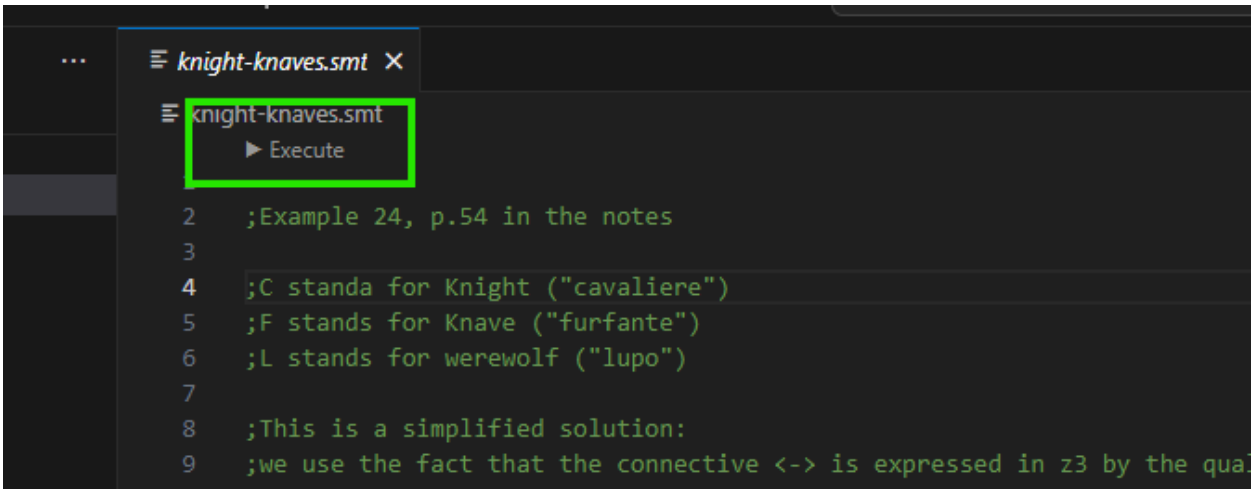

Computational Logic
OneDrive › Giovanni - Personal › Scuola › Università › Computational Logic
Search Computational Logic
New
Sort
View
Details
Home
Gallery
Giovanni - Persona
Desktop
Downloads
Documents
Pictures
Music
Videos
tracks
Tracks
Computational Log
ZIP
This PC
Network
Name
Status
Date modified
Type
Size
knight-knaves.txt
03/10/2024 19:09
Text Document
2 KB
z3_example.smt
03/10/2024 19:08
SMT File
1 KB
2 items | 1 item selected 1,66 KB | Available on this device
ENG
19:38
03/10/2024


Computational Logic
OneDrive › Giovanni - Personal › Scuola › Università › Computational Logic
Search Computational Logic
New
Sort
View
Details
Home
Gallery
Giovanni - Persona
Desktop
Downloads
Documents
Pictures
Music
Videos
tracks
Tracks
Computational Log
ZIP
This PC
Network
Name
Status
Date modified
Type
Size
knight-knaves.txt
03/10/2024 19:09
Text Document
2 KB
z3_example.smt
03/10/2024 19:08
SMT File
1 KB
2 items | 1 item selected 1,66 KB | Available on this device
ENG
19:38
03/10/2024

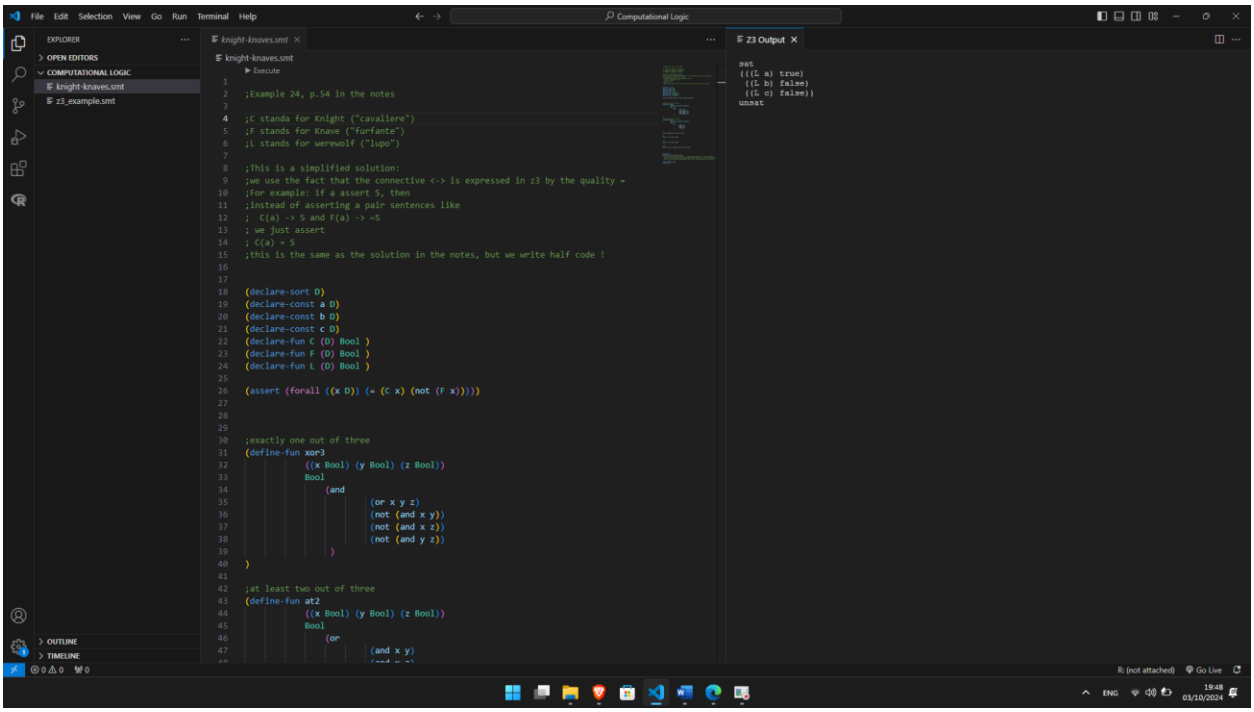


7. Oper your .smt file in VS Code

8. Click On *Execute*



A second tab should open on the left showing the output:


File Edit Selection View Go Run Terminal Help
Computational Logic
EXPLORER
OPEN EDITORS
COMPUTATIONAL LOGIC
knight-knaves.smt
z3_example.smt
knight-knaves.smt
Execute
;Example 24, p.54 in the notes
;C standa for Knight ("cavaliere")
;F stands for Knave ("furfante")
;L stands for werewolf ("lupo")
;This is a simplified solution:
;we use the fact that the connective <-> is expressed in z3 by the quality =
;For example: if a assert S, then
;instead of asserting a pair sentences like
; C(a) -> S and F(a) -> ~S
; we just assert
; C(a) = S
;this is the same as the solution in the notes, but we write half code !
(declare-sort D)
(declare-const a D)
(declare-const b D)
(declare-const c D)
(declare-fun C (D) Bool)
(declare-fun F (D) Bool)
(declare-fun L (D) Bool)
(assert (forall ((x D)) (= (C x) (not (F x)))))
;exactly one out of three
(define-fun xor3
((x Bool) (y Bool) (z Bool))
Bool
(and
(or x y z)
(not (and x y))
(not (and x z))
(not (and y z))
)
)
;at least two out of three
(define-fun at2
((x Bool) (y Bool) (z Bool))
Bool
(or
(and x y)
Z3 Output
sat
((L a) true)
((L b) false)
((L c) false))
unsat
OUTLINE
TIMELINE
R: (not attached)
Go Live
ENG
19:48
03/10/2024