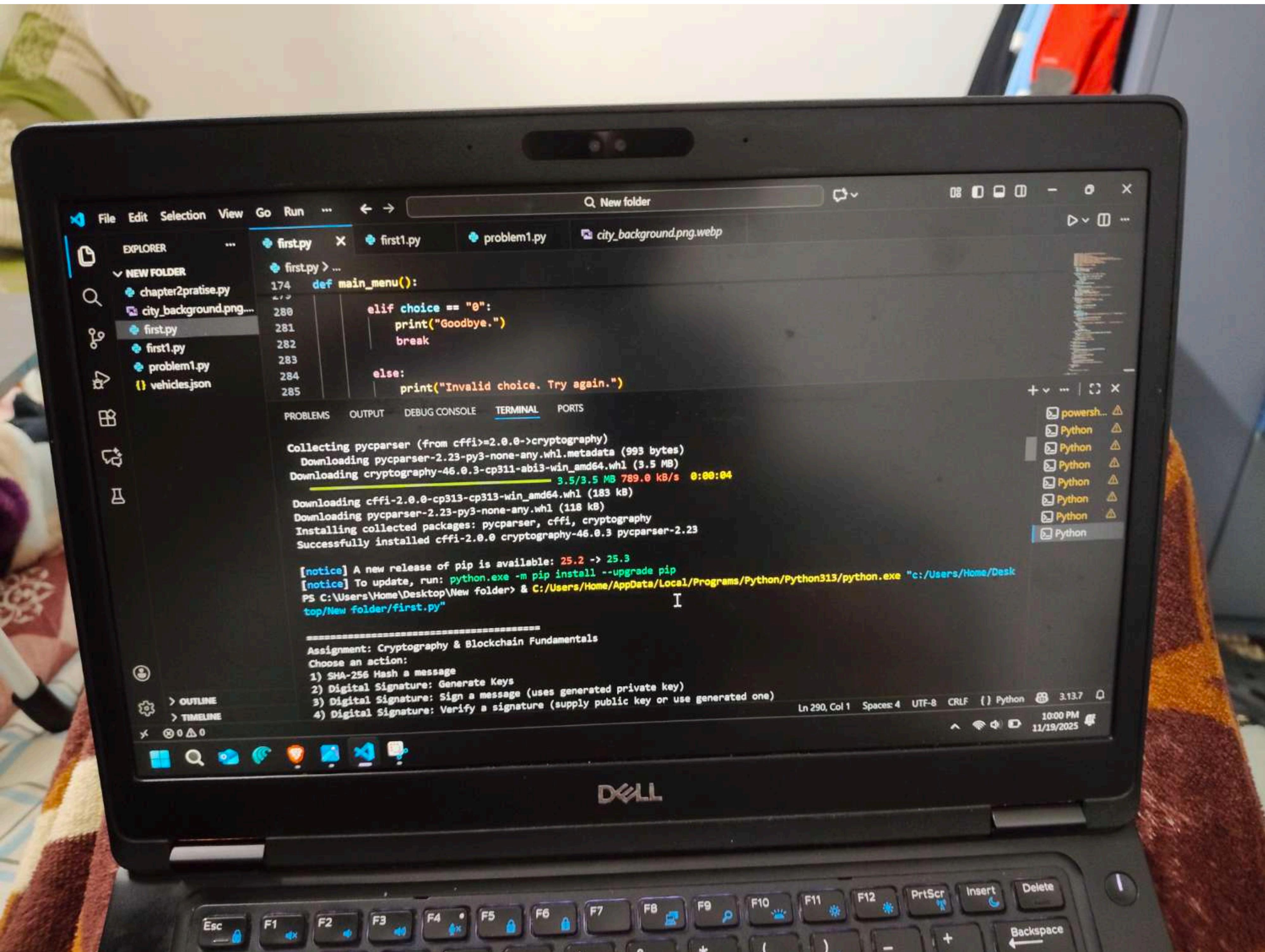


A Dell laptop screen displaying a Python development environment in Visual Studio Code (VS Code). The screen shows the following details:

- File Explorer:** Shows a folder named "NEW FOLDER" containing files: chapter2pratise.py, city_background.png, first.py, first1.py, problem1.py, and vehicles.json.
- Code Editor:** Displays a Python script named "first.py". The code includes a function "main_menu" with logic for user input and module imports.
- Terminal:** Shows a command-line session where the user runs "python first.py". It outputs a traceback indicating a "ModuleNotFoundError: No module named 'rsa'" and a "ModuleNotFoundError: No module named 'cryptography'".
- Output:** Shows the results of running "pip install cryptography", which installs several packages including cryptography, cffi, and pycparser.
- Status Bar:** Provides system information like battery level (31%), signal strength, and date/time (10:00 PM, 11/19/2025).



File Edit Selection View Go Run ... ← → Q, New folder

EXPLORER NEW FOLDER first.py first1.py problem1.py city_background.png.webp

first.py > ...

```
174     def main_menu():
175         ...
176         elif choice == "0":
177             print("Goodbye.")
178             break
179         else:
180             print("Invalid choice. Try again.")
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

4) Digital Signature: Verify a signature (supply public key or use generated one)
5) Vehicle Registry: Register a vehicle
6) Vehicle Registry: Retrieve vehicle by plate
7) Export current RSA keys to PEM (show on screen)
8) Exit

Enter choice: 1
Enter text to hash: 7
SHA-256: 7902699be42c8a8e46fbbb4501726517e86b22c56a189f7625a6da49081b2451

Assignment: Cryptography & Blockchain Fundamentals
Choose an action:
1) SHA-256 Hash a message
2) Digital Signature: Generate Keys
3) Digital Signature: Sign a message (uses generated private key)
4) Digital Signature: Verify a signature (supply public key or use generated one)
5) Vehicle Registry: Register a vehicle
6) Vehicle Registry: Retrieve vehicle by plate
7) Export current RSA keys to PEM (show on screen)
8) Exit

Enter choice: 8

Ln 290, Col 1 Spaces: 4 UTF-8 CRLF () Python 3.13.7 10:00 PM 11/19/2025

A screenshot of a Dell laptop screen showing a terminal session in a Visual Studio Code (VS Code) window. The terminal displays a menu with options 6 through 8, followed by an invalid choice message. The code editor shows a Python file named 'first.py' with a main menu function. The status bar at the bottom indicates the terminal is using Python 3.13.7.

```
File Edit Selection View Go Run ... ⏪ ⏩ New folder
EXPLORER ...
NEW FOLDER
chapter2pratise.py
city_background.png...
first.py > ...
first1.py
problem1.py
vehicles.json
first.py
first1.py
problem1.py
city_background.png.webp

174     def main_menu():
175         ...
176         elif choice == "6":
177             print("Goodbye.")
178             break
179
180         else:
181             print("Invalid choice. Try again.")

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

6) Vehicle Registry: Retrieve vehicle by plate
7) Export current RSA keys to PEM (show on screen)
8) Exit
Enter choice: 8
Invalid choice. Try again.

=====
Assignment: Cryptography & Blockchain Fundamentals
Choose an action:
1) SHA-256 Hash a message
2) Digital Signature: Generate Keys
3) Digital Signature: Sign a message (uses generated private key)
4) Digital Signature: Verify a signature (supply public key or use generated one)
5) Vehicle Registry: Register a vehicle
6) Vehicle Registry: Retrieve vehicle by plate
7) Export current RSA keys to PEM (show on screen)
8) Exit
Enter choice: 8
Invalid choice. Try again.

=====

Ln 290, Col 1  Spaces: 4  UTF-8  CRLF  () Python 3.13.7  10:00 PM  11/19/2025
```

first.py first1.py problem1.py city_background.png.webp

firstpy > ...

```
174 def main_menu():
175
176     elif choice == "0":
177         print("Goodbye.")
178         break
179
180     else:
181         print("Invalid choice. Try again.")
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

3) Digital Signature: Sign a message (uses generated private key)
4) Digital Signature: Verify a signature (supply public key or use generated one)
5) Vehicle Registry: Register a vehicle
6) Vehicle Registry: Retrieve vehicle by plate
7) Export current RSA keys to PEM (show on screen)
8) Exit

Enter choice: 2

Assignment: Cryptography & Blockchain Fundamentals

Choose an action:

1) SHA-256 Hash a message
2) Digital Signature: Generate Keys
3) Digital Signature: Sign a message (uses generated private key)
4) Digital Signature: Verify a signature (supply public key or use generated one)
5) Vehicle Registry: Register a vehicle
6) Vehicle Registry: Retrieve vehicle by plate
7) Export current RSA keys to PEM (show on screen)
8) Exit

Enter choice: 2

Assignment: Cryptography & Blockchain Fundamentals

Ln 290, Col 1 Spaces: 4 UTF-8 CRLF () Python 3.13.7 10:01 PM

10:01 PM
11/19/2025

The screenshot shows a laptop screen with a dark-themed code editor interface. The terminal tab is active, displaying the following Python script output:

```
def main_menu():
    choice = input("Enter choice: ")
    if choice == "0":
        print("Goodbye.")
        break
    else:
        print("Invalid choice. Try again.")

Enter choice: 2
Vehicle HR26 FG0001 registered successfully.
Vehicle HR26 FG0001 registered successfully.
=====
Assignment-Cryptography-B-Blockchain-Fundamentals
Assignment-Cryptography & Blockchain Fundamentals
Choose-256bit message
2) Sign 256 bit message
3) Digital Signature: Generate (uses generated private key)
4) Digital Signature: Signify message (use generated public key)
5) Vehicle Registry: Register vehicle plate
6) Generate RSA keys PEM (show on screen)
Enter choice: 2
Enter choice: 2
=====
Assignment-Cryptography-B-Blockchain-Fundamentals
Assignment-Cryptography & Blockchain Fundamentals
Choose-256bit message
2) Sign 256 bit message
```

The status bar at the bottom right of the terminal window shows the following information: Ln 290, Col 1, Spaces: 4, UTF-8, CRLF, Python, 3.13.7, 10:01 PM, 11/19/2025.

A screenshot of a Dell laptop screen showing a Python application running in a Visual Studio Code (VS Code) terminal. The application is a menu-based program for vehicle registration and management. The terminal output shows the following sequence:

```
1) SHA-256 Hash a message
2) Digital Signature: Generate Keys
3) Digital Signature: Sign a message (uses generated private key)
4) Digital Signature: Verify a signature (supply public key or use generated one)
5) Vehicle Registry: Register a vehicle
6) Vehicle Registry: Retrieve vehicle by plate
7) Export current RSA keys to PEM (show on screen)
8) Exit
Enter choice: 5

--- Register Vehicle ---
Enter Number Plate (e.g. ABC-1234): HR26 FG0001
Owner Name: HUNNY
Vehicle Model: THAR
Vehicle HR26 FG0001 registered successfully.

=====
Assignment: Cryptography & Blockchain Fundamentals
Choose an action:
1) SHA-256 Hash a message
2) Digital Signature: Generate Keys
```

The VS Code interface includes the following elements:

- File Explorer:** Shows files like `first.py`, `first1.py`, `problem1.py`, and `city_background.png.webp`.
- Terminal:** Active tab, showing the application's interaction log.
- Output:** Tab showing the application's output.
- Debug Console:** Tab showing the application's debug information.
- Problems:** Tab showing any errors or warnings.
- Ports:** Tab showing network port information.

The status bar at the bottom right shows the following details:

- Ln 290, Col 1
- Spaces: 4
- UTF-8
- CRLF
- { } Python
- 3.13.7
- 10:01 PM
- 11/19/2025

A screenshot of a Dell laptop screen showing a terminal session in a dark-themed code editor, likely Visual Studio Code. The terminal window is active and displays a Python script running. The script defines a main menu function with several options. The user has selected option 1, which hashes the input 'aman' using SHA-256, resulting in the output hash: 180d803a580fabe1a24ddfdf6bf51ecbea0eb81f256b69ea6b39b33d294f6ebf.

```
File Edit Selection View Go Run ... ← → Q New folder
EXPLORER ... firstpy x first1.py problem1.py city_background.png.webp
NEW FOLDER chapter2pratise.py
firstpy > ...
firstpy
first1.py
problem1.py
vehicles.json
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
Assignment: Cryptography & Blockchain Fundamentals
Choose an action:
1) SHA-256 Hash a message
2) Digital Signature: Generate Keys
3) Digital Signature: Sign a message (uses generated private key)
4) Digital Signature: Verify a signature (supply public key or use generated one)
5) Vehicle Registry: Register a vehicle
6) Vehicle Registry: Retrieve vehicle by plate
7) Export current RSA keys to PEM (show on screen)
8) Exit
Enter choice: 1
Enter text to hash: aman
SHA-256: 180d803a580fabe1a24ddfdf6bf51ecbea0eb81f256b69ea6b39b33d294f6ebf
Assignment: Cryptography & Blockchain Fundamentals
Choose an action:
1) SHA-256 Hash a message
2) Digital Signature: Generate Keys
3) Digital Signature: Sign a message (uses generated private key)
4) Digital Signature: Verify a signature (supply public key or use generated one)
```

A screenshot of a Dell laptop screen showing a Python code editor in Visual Studio Code. The code in the main editor pane is:

```
174 def main_menu():
175     ...
176     elif choice == "0":
177         print("Goodbye.")
178         break
179     else:
180         print("Invalid choice. Try again.")
```

The terminal pane shows the following interaction:

```
6) Vehicle Registry: Retrieve vehicle by plate
7) Export current RSA keys to PEM (show on screen)
8) Exit
Enter choice: & C:/Users/Home/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/Home/Desktop/New folder/first.py"
Invalid choice. Try again.

=====
Assignment: Cryptography & Blockchain Fundamentals
Choose an action:
1) SHA-256 Hash a message
2) Digital Signature: Generate Keys
3) Digital Signature: Sign a message (uses generated private key)
4) Digital Signature: Verify a signature (supply public key or use generated one)
5) Vehicle Registry: Register a vehicle
6) Vehicle Registry: Retrieve vehicle by plate
7) Export current RSA keys to PEM (show on screen)
8) Exit
Enter choice: []
```

DELL

Esc F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12 PrtScr Insert Delete Backspace

File Edit Selection View Go Run ← → Q New folder

EXPLORER

NEW FOLDER

chapter2pratice.py

city_background.png...

first.py

first1.py

problem1.py

city_background.png.wep

174 def main_menu():

175 choice = input("Please choose an option: ")

176 if choice == "1":

177 print("You chose option 1")

178 elif choice == "2":

179 print("Goodbye.")

180 break

181 else:

182 print("Invalid choice. Try again.")

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Generated RSA 2048-bit key pair.

=====

Assignment: Cryptography & Blockchain Fundamentals

Choose an action:

1) SHA-256 Hash a message

Assignment: Cryptography & Blockchain Fundamentals

Choose an action:

1) SHA-256 Hash a message

2) Digital Signature: Generate Keys

3) Digital Signature: Sign a message (uses generated private key)

Choose an action:

1) SHA-256 Hash a message

2) Digital Signature: Generate Keys

3) Digital Signature: Sign a message (uses generated private key)

2) Digital Signature: Generate Keys

3) Digital Signature: Sign a message (uses generated private key)

4) Digital Signature: Verify a signature (supply public key or use generated one)

5) Vehicle Registry: Register a vehicle

Ln 290, Col 1 Spaces: 4 UTF-8 CRLF Python 3.10.7 10:01 PM 11/19/2023

DELL

F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12 PrtScr Insert Delete

! @ # \$ % ^ & * () _ + - = Backspace

1 2 3 4 ₹ 5 € 6 7 8 9 0

The image shows a Dell laptop screen displaying a Python code editor interface, likely Visual Studio Code (VS Code). The terminal window shows a menu system and RSA key generation logs.

```
File Edit Selection View Go Run ... ← → Q New folder
EXPLORER ... firstpy X first1.py problem1.py city_background.png.webp
NEW FOLDER
chapter2pratise.py
city_background.png...
first.py
first1.py
problem1.py
vehicles.json
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
0) Exit
Enter choice: 2
5) Vehicle Registry: Register a vehicle
6) Vehicle Registry: Retrieve vehicle by plate
7) Export current RSA keys to PEM (show on screen)
0) Exit
Enter choice: 2
6) Vehicle Registry: Retrieve vehicle by plate
7) Export current RSA keys to PEM (show on screen)
0) Exit
Enter choice: 2
Key size in bits [2048]: 2048
Generated RSA 2048-bit key pair.
Enter choice: 2
Key size in bits [2048]: 2048
Generated RSA 2048-bit key pair.
Key size in bits [2048]: 2048
Generated RSA 2048-bit key pair.
Ln 290, Col 1 Spaces: 4 UTF-8 CRLF () Python 3.13.7
10:01 PM 11/19/2025
```

The image shows a Dell laptop screen displaying a Python code editor interface, likely Visual Studio Code (VS Code). The screen is divided into several panes:

- EXPLORER** pane on the left showing files: first.py, first1.py, problem1.py, and city_background.png.webp.
- CODE** pane showing the content of first.py:

```
174 def main_menu():
175     choice = input("Enter choice: ")
176     if choice == "1":
177         print("Hello")
178     elif choice == "2":
179         print("Goodbye.")
180         break
181     else:
182         print("Invalid choice. Try again.")
```

- TERMINAL** pane at the bottom showing a terminal session:

```
7) Export current RSA keys to PEM (show on screen)
0) Exit
Enter choice: 2
4) Digital Signature: Verify a signature (supply public key or use generated one)
5) Vehicle Registry: Register a vehicle
6) Vehicle Registry: Retrieve vehicle by plate
7) Export current RSA keys to PEM (show on screen)
0) Exit
Enter choice: 2
5) Vehicle Registry: Register a vehicle
6) Vehicle Registry: Retrieve vehicle by plate
7) Export current RSA keys to PEM (show on screen)
0) Exit
Enter choice: 2
6) Vehicle Registry: Retrieve vehicle by plate
7) Export current RSA keys to PEM (show on screen)
0) Exit
Enter choice: 2
Key size in bits [2048]: 2048
Generated RSA 2048-bit key pair.
Enter choice: 2
```

- OUTPUT**, **DEBUG CONSOLE**, and **PORTS** tabs are also visible below the terminal.
- RIGHT SIDE BAR**: Shows a list of recent Python environments or files.

The status bar at the bottom right indicates: Ln 290, Col 1, Spaces: 4, UTF-8, CRLF, Python, 3.13.7, 1001 PM, 11/19/2023.