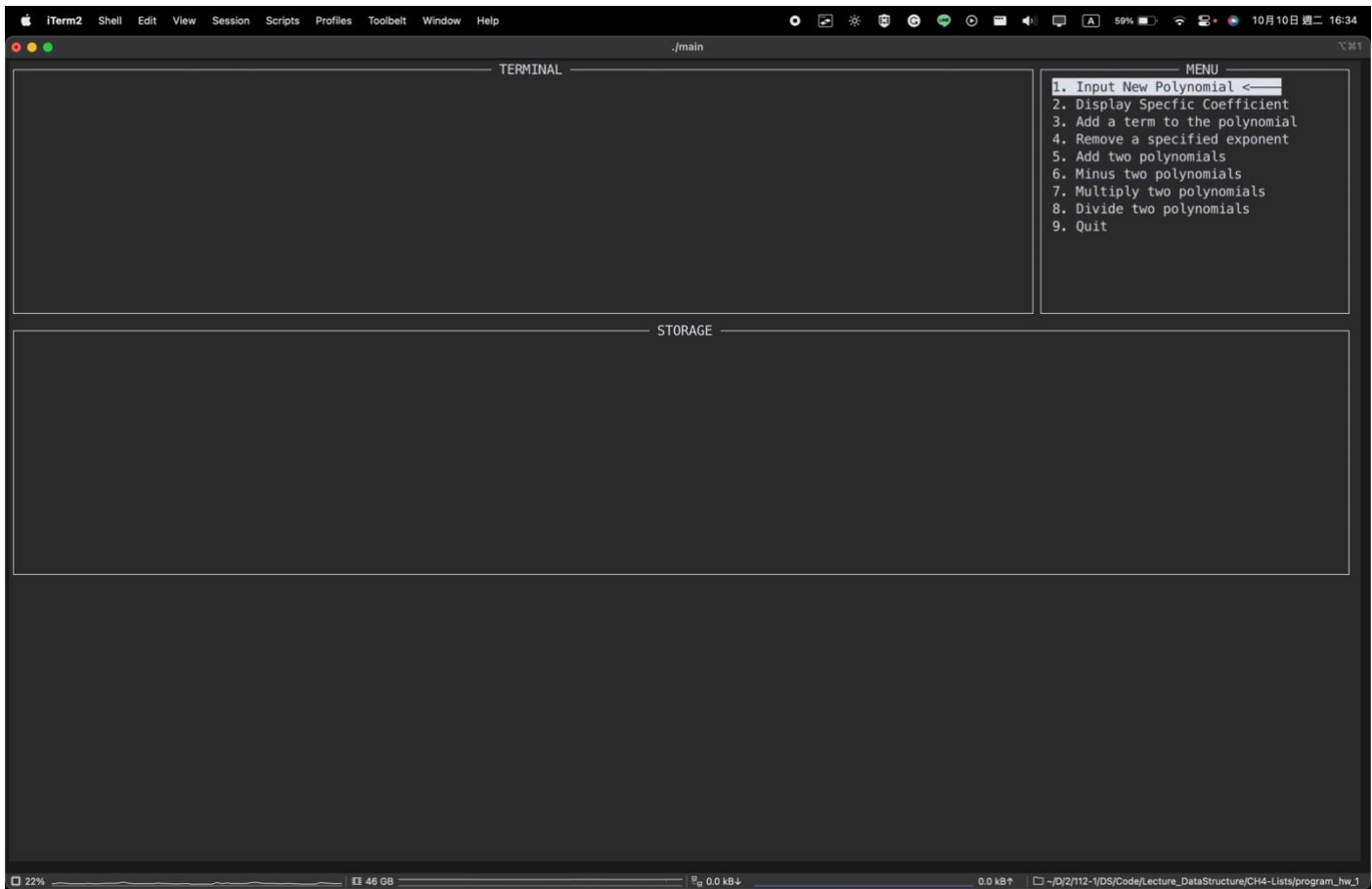
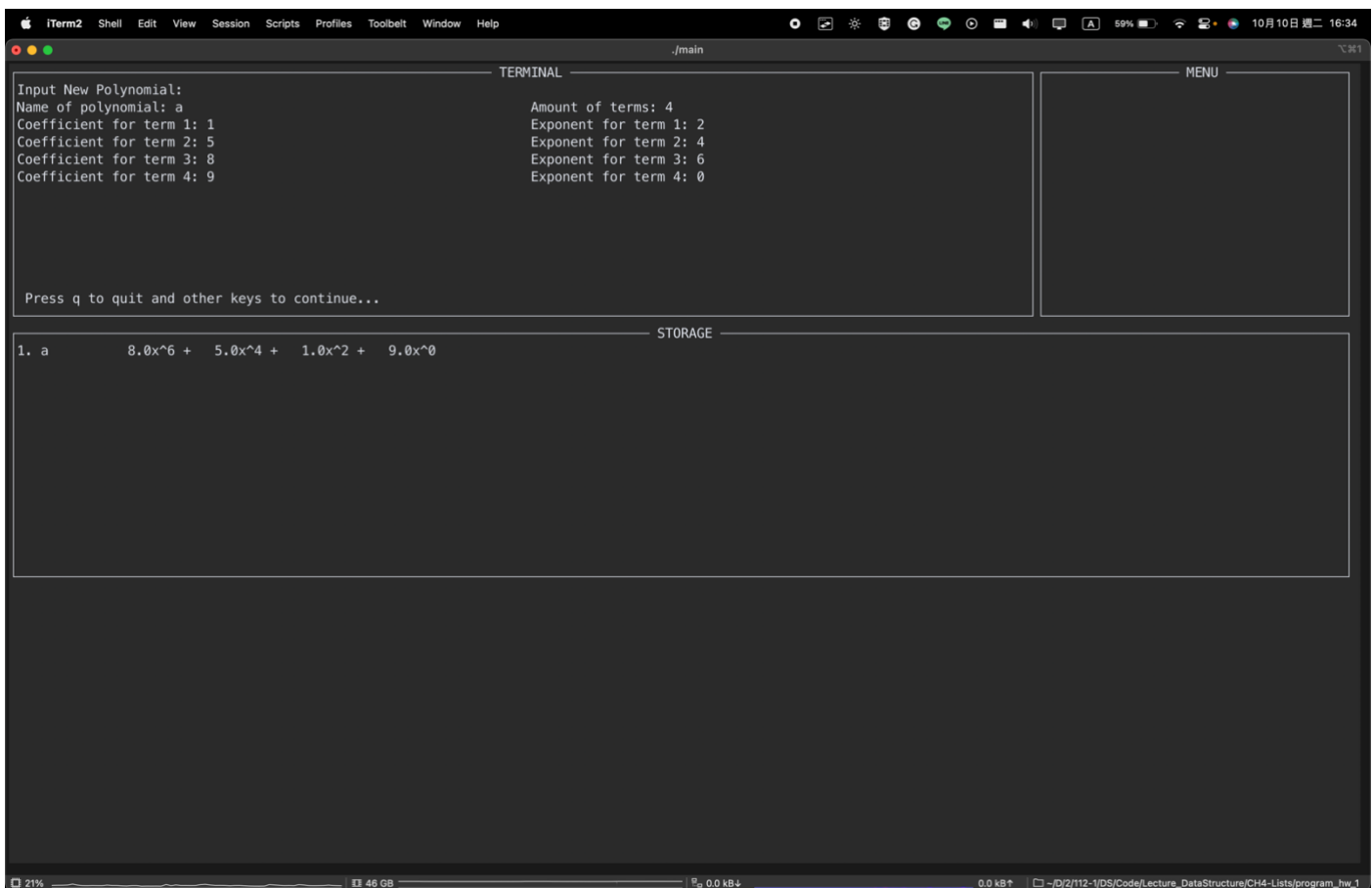


1. 主選單介面：可使用上下鍵互動（自行設計輸出入介面設計）



2. 選擇 Input New Polynomial（由鍵盤輸入一個 X 的多項式、由螢幕顯示多項式的內容）

額外功能：輸入多項式時不必按照次方數由大到小，會先排序好再儲存



3. 選擇 Input New Polynomial （可儲存多個多項式並加以命名）

The screenshot shows the iTerm2 terminal window with the following content:

```
iTerm2 Shell Edit View Session Scripts Profiles Toolbelt Window Help
./main

Input New Polynomial:
Name of polynomial: b
Coefficient for term 1: 3
Coefficient for term 2: 1
Coefficient for term 3: 2

Amount of terms: 3
Exponent for term 1: 3
Exponent for term 2: 1
Exponent for term 3: 2

Press q to quit and other keys to continue...
```

The STORAGE section at the bottom shows:

```
1. a      8.0x^6 + 5.0x^4 + 1.0x^2 + 9.0x^0
2. b      3.0x^3 + 2.0x^2 + 1.0x^1
```

The screenshot shows the iTerm2 terminal window with the following content:

```
iTerm2 Shell Edit View Session Scripts Profiles Toolbelt Window Help
./main

Input New Polynomial:
Name of polynomial: c
Coefficient for term 1: -9
Coefficient for term 2: -7

Amount of terms: 2
Exponent for term 1: 2
Exponent for term 2: 0

Press q to quit and other keys to continue...
```

The STORAGE section at the bottom shows:

```
1. a      8.0x^6 + 5.0x^4 + 1.0x^2 + 9.0x^0
2. b      3.0x^3 + 2.0x^2 + 1.0x^1
3. c      -9.0x^2 + -7.0x^0
```

4. 選擇 Display Specific Coefficient (指定多項式之指數次方，顯示該項的係數值)

iTerm2 Shell Edit View Session Scripts Profiles Toolbelt Window Help

./main

TERMINAL

MENU

1. Input New Polynomial
2. Display Specific Coefficient <-
3. Add a term to the polynomial
4. Remove a specified exponent
5. Add two polynomials
6. Minus two polynomials
7. Multiply two polynomials
8. Divide two polynomials
9. Quit

STORAGE

1. a $8.0x^6 + 5.0x^4 + 1.0x^2 + 9.0x^0$
2. b $3.0x^3 + 2.0x^2 + 1.0x^1$
3. c $-9.0x^2 + -7.0x^0$

26% 46 GB 0.0 kB↓ 0.0 kB↑ ~/D/2/112-1/DS/Code/Lecture_DataStructure/program_hw_1

iTerm2 Shell Edit View Session Scripts Profiles Toolbelt Window Help

./main

TERMINAL

MENU

Display Specific Coefficient:
Position of polynomial: 1
Coefficient of exponent to print: 0
The coefficient of x^0 is: 9.0

Press q to quit and other keys to continue...

STORAGE

1. a $8.0x^6 + 5.0x^4 + 1.0x^2 + 9.0x^0$
2. b $3.0x^3 + 2.0x^2 + 1.0x^1$
3. c $-9.0x^2 + -7.0x^0$

23% 46 GB 0.0 kB↓ 0.0 kB↑ ~/D/2/112-1/DS/Code/Lecture_DataStructure/CH4-Lists/program_hw_1

5. 選擇 Add a term to the Polynomial (可新增多項式一個非零項)

The screenshot shows the iTerm2 terminal window with the following content:

```
./main

MENU
1. Input New Polynomial
2. Display Specific Coefficient
3. Add a term to the polynomial <
4. Remove a specified exponent
5. Add two polynomials
6. Minus two polynomials
7. Multiply two polynomials
8. Divide two polynomials
9. Quit

1. a      8.0x^6 + 5.0x^4 + 1.0x^2 + 9.0x^0
2. b      3.0x^3 + 2.0x^2 + 1.0x^1
3. c      -9.0x^2 + -7.0x^0
```

The terminal window has a menu on the right and a storage area at the bottom. The menu is titled "MENU" and lists 9 options. Option 3, "Add a term to the polynomial", is highlighted with a cursor. The storage area is titled "STORAGE" and shows three polynomials: a, b, and c.

The screenshot shows the iTerm2 terminal window after selecting option 3 from the menu. The terminal displays the following prompts and input:

```
./main

Add a term to the polynomial:
Position of polynomial: 3
Coefficient for the term: 8

Exponent for the term: 1

Press q to quit and other keys to continue...

1. a      8.0x^6 + 5.0x^4 + 1.0x^2 + 9.0x^0
2. b      3.0x^3 + 2.0x^2 + 1.0x^1
3. c      -9.0x^2 + 8.0x^1 + -7.0x^0
```

The terminal window now shows the updated polynomial 'c' in the storage area, which includes the new term $8.0x^1$. The menu is no longer visible.

6. 選擇 Remove a specified exponent (可移除多項式某個指定指數的非零項)

```
iTerm2 Shell Edit View Session Scripts Profiles Toolbelt Window Help
./main

TERMINAL

MENU
1. Input New Polynomial
2. Display Specific Coefficient
3. Add a term to the polynomial
4. Remove a specified exponent <---
5. Add two polynomials
6. Minus two polynomials
7. Multiply two polynomials
8. Divide two polynomials
9. Quit

STORAGE
1. a      8.0x^6 + 5.0x^4 + 1.0x^2 + 9.0x^0
2. b      3.0x^3 + 2.0x^2 + 1.0x^1
3. c     -9.0x^2 + 8.0x^1 + -7.0x^0

21% 46 GB 0.0 kB 0.0 kB /-D/2/112-1/DS/Code/Lecture_DataStructure/CH4-Lists/program_hw_1
```

```
iTerm2 Shell Edit View Session Scripts Profiles Toolbelt Window Help
./main

TERMINAL
Remove a specified exponent:
Position of polynomial: 2
Exponent to delete: 1

Press q to quit and other keys to continue...

STORAGE
1. a      8.0x^6 + 5.0x^4 + 1.0x^2 + 9.0x^0
2. b      3.0x^3 + 2.0x^2 + 1.0x^1
3. c     -9.0x^2 + 8.0x^1 + -7.0x^0

24% 46 GB 1.0 kB 3.1 kB /-D/2/112-1/DS/Code/Lecture_DataStructure/CH4-Lists/program_hw_1
```

7. 選擇 Add two polynomials (讀入兩個多項式，進行多項式相加，並顯示結果)

```
iTerm2 Shell Edit View Session Scripts Profiles Toolbelt Window Help
./main

MENU
1. Input New Polynomial
2. Display Specific Coefficient
3. Add a term to the polynomial
4. Remove a specified exponent
5. Add two polynomials <-----
6. Minus two polynomials
7. Multiply two polynomials
8. Divide two polynomials
9. Quit

STORAGE
1. a      8.0x^6 +  5.0x^4 +  1.0x^2 +  9.0x^0
2. b      3.0x^3 +  2.0x^2
3. c     -9.0x^2 +  8.0x^1 + -7.0x^0

23% 46 GB 4.1 kB↓ 2.1 kB↑ ~/D/2/112-1/DS/Code/Lecture_DataStructure/program_hw_1
```

```
iTerm2 Shell Edit View Session Scripts Profiles Toolbelt Window Help
./main

Add two polynomials:
Position of polynomial 1: 1
Position of polynomial 2: 2
Answer:      8.0x^6 +  5.0x^4 +  3.0x^3 +  3.0x^2 +  9.0x^0

Press q to quit and other keys to continue...

STORAGE
1. a      8.0x^6 +  5.0x^4 +  1.0x^2 +  9.0x^0
2. b      3.0x^3 +  2.0x^2
3. c     -9.0x^2 +  8.0x^1 + -7.0x^0

23% 46 GB 0.0 kB↓ 0.0 kB↑ ~/D/2/112-1/DS/Code/Lecture_DataStructure/CH4-Lists/program_hw_1
```

8. 選擇 Minus two polynomials (讀入兩個多項式，進行多項式相減，並顯示結果)

```
iTerm2 Shell Edit View Session Scripts Profiles Toolbelt Window Help
./main
MENU
1. Input New Polynomial
2. Display Specific Coefficient
3. Add a term to the polynomial
4. Remove a specified exponent
5. Add two polynomials
6. Minus two polynomials <-----
7. Multiply two polynomials
8. Divide two polynomials
9. Quit

1. a      8.0x^6 + 5.0x^4 + 1.0x^2 + 9.0x^0
2. b      3.0x^3 + 2.0x^2
3. c      -9.0x^2 + 8.0x^1 + -7.0x^0

30% 46 GB 0.0 kB↓ 0.0 kB↑ ~/D/2/112-1/DS/Code/Lecture_DataStructure/term-assignment/term_1
```

```
iTerm2 Shell Edit View Session Scripts Profiles Toolbelt Window Help
./main
Minus two polynomials:
Position of polynomial 1: 1
Position of polynomial 2: 3
Answer:      8.0x^6 + 5.0x^4 + 10.0x^2 + -8.0x^1 + 16.0x^0

Press q to quit and other keys to continue...

1. a      8.0x^6 + 5.0x^4 + 1.0x^2 + 9.0x^0
2. b      3.0x^3 + 2.0x^2
3. c      -9.0x^2 + 8.0x^1 + -7.0x^0

23% 46 GB 3.1 kB↓ 4.1 kB↑ ~/D/2/112-1/DS/Code/Lecture_DataStructure/term-assignment/term_1
```

9. 選擇 Multiply two polynomials (讀入兩個多項式，進行多項式相乘，並顯示結果)

```
iTerm2 Shell Edit View Session Scripts Profiles Toolbelt Window Help
./main

TERMINAL

MENU
1. Input New Polynomial
2. Display Specific Coefficient
3. Add a term to the polynomial
4. Remove a specified exponent
5. Add two polynomials
6. Minus two polynomials
7. Multiply two polynomials <---
8. Divide two polynomials
9. Quit

STORAGE
1. a      8.0x^6 + 5.0x^4 + 1.0x^2 + 9.0x^0
2. b      3.0x^3 + 2.0x^2
3. c     -9.0x^2 + 8.0x^1 + -7.0x^0

24% 46 GB 1.0 kB 3.1 kB ~/D/2/112-1/DS/Code/Lecture_DataStructure/program_hw_1
```

```
iTerm2 Shell Edit View Session Scripts Profiles Toolbelt Window Help
./main

TERMINAL
Multiply two polynomials:
Position of polynomial 1: 1
Position of polynomial 2: 2
Answer:      24.0x^9 + 16.0x^8 + 15.0x^7 + 10.0x^6 + 3.0x^5 + 2.0x^4 + 27.0x^3 + 18.0x^2

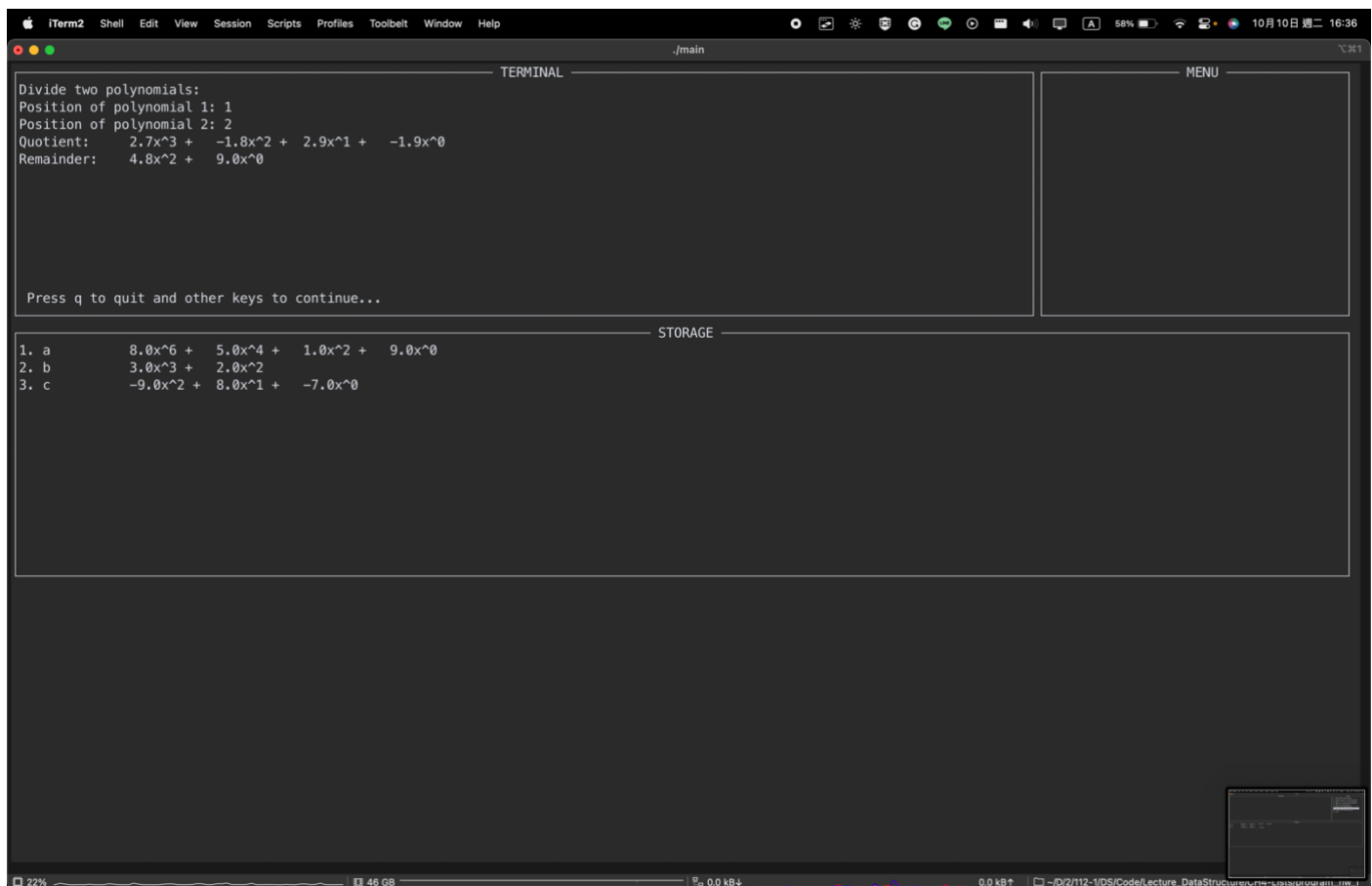
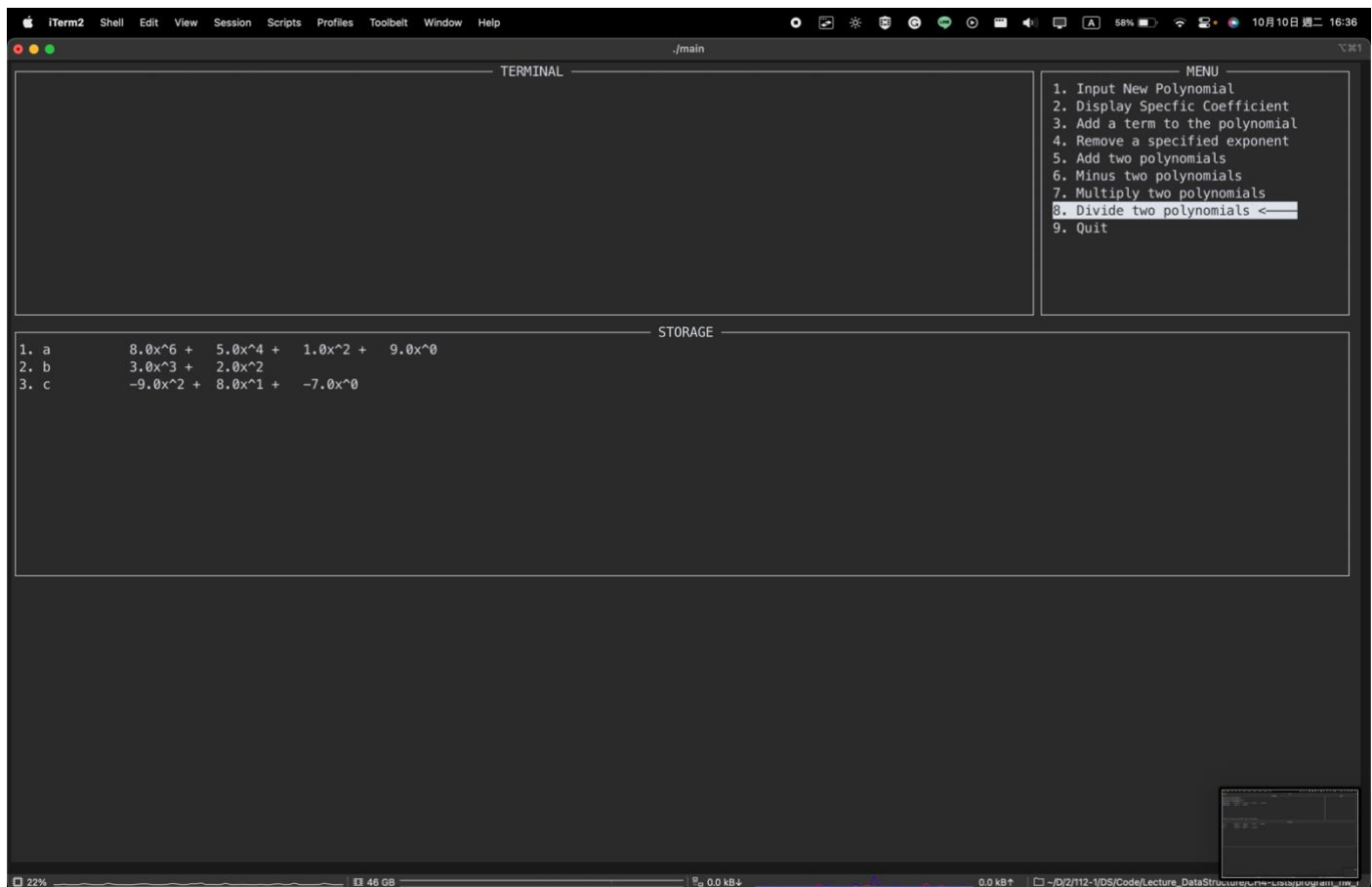
Press q to quit and other keys to continue...

MENU

STORAGE
1. a      8.0x^6 + 5.0x^4 + 1.0x^2 + 9.0x^0
2. b      3.0x^3 + 2.0x^2
3. c     -9.0x^2 + 8.0x^1 + -7.0x^0

22% 46 GB 0.0 kB 0.0 kB ~/D/2/112-1/DS/Code/Lecture_DataStructure/CH4-Lists/program_hw_1
```


10. 選擇 Divide two polynomials (讀入兩個多項式，進行多項式相除，並顯示商及餘數)



11. 選擇 Quit

The screenshot shows an iTerm2 terminal window with a dark theme. The title bar indicates the window is titled ".main". The terminal is divided into three sections: a large "TERMINAL" section at the top, a "MENU" section on the right, and a "STORAGE" section at the bottom.

TERMINAL

```
1. a      8.0x^6 + 5.0x^4 + 1.0x^2 + 9.0x^0
2. b      3.0x^3 + 2.0x^2
3. c      -9.0x^2 + 8.0x^1 + -7.0x^0
```

MENU

```
1. Input New Polynomial
2. Display Specific Coefficient
3. Add a term to the polynomial
4. Remove a specified exponent
5. Add two polynomials
6. Minus two polynomials
7. Multiply two polynomials
8. Divide two polynomials
9. Quit <—
```

STORAGE

The terminal status bar at the bottom shows 25% zoom, 46 GB memory, and network activity.

The screenshot shows an iTerm2 terminal window with a dark theme. The title bar indicates the window is titled "angushuang@AngusdeMacBook-Pro: ~/Documents/2-大學學業/112-1/DS/Code/Lecture_DataStructure/CH4-Lists/program_hw_1". The terminal shows the execution of a program with three separate runs.

Run 1:

```
~/Doc/2-大學學業/112-1/DS/Code/Lecture_DataStructure/CH4-Lists/program_hw_1 main !4 16:34:06
make
gcc -o main main.c function.c window.c -lncurses -I /opt/homebrew/Cellar/ncurses/6.4/include -L /opt/homebrew/Cellar/ncurses/6.4/lib
```

Run 2:

```
~/Doc/2-大學學業/112-1/DS/Code/Lecture_DataStructure/CH4-Lists/program_hw_1 main !4 16:34:15
./main
```

Run 3:

```
~/Doc/2-大學學業/112-1/DS/Code/Lecture_DataStructure/CH4-Lists/program_hw_1 main !4 16:36:32
2m 15s
```

The terminal status bar at the bottom shows 25% zoom, 46 GB memory, and network activity.

上述功能皆以模組化設計，操作過程連結：<https://youtu.be/VGpDrP7--hg>