

Lab 1. Environment Setup & Java Basics

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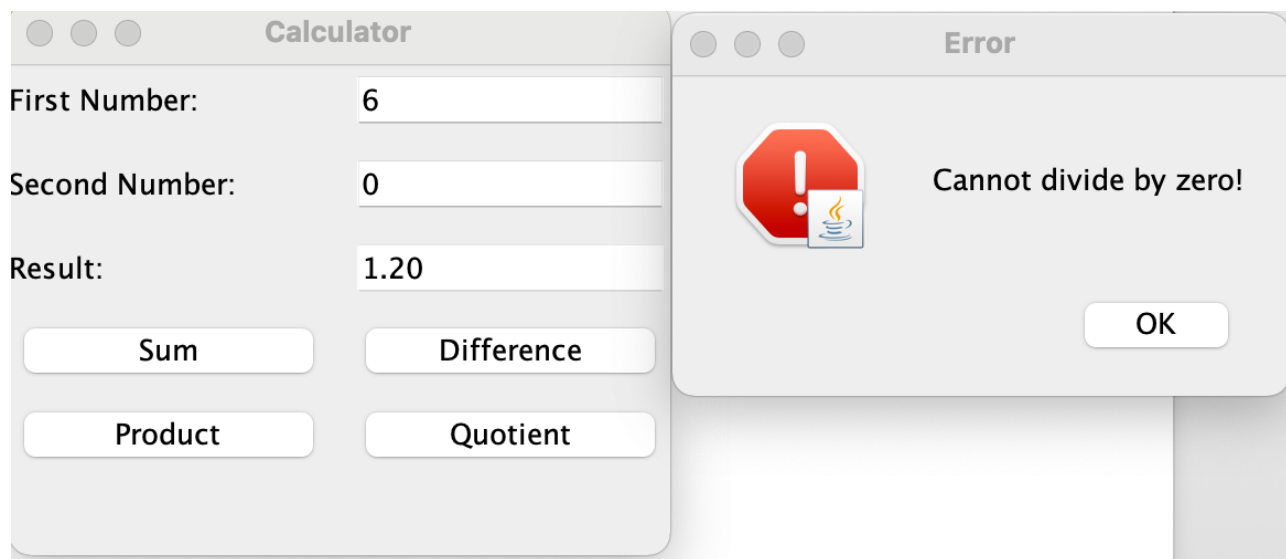
MSSV: 202416733

Ex2.2.5.

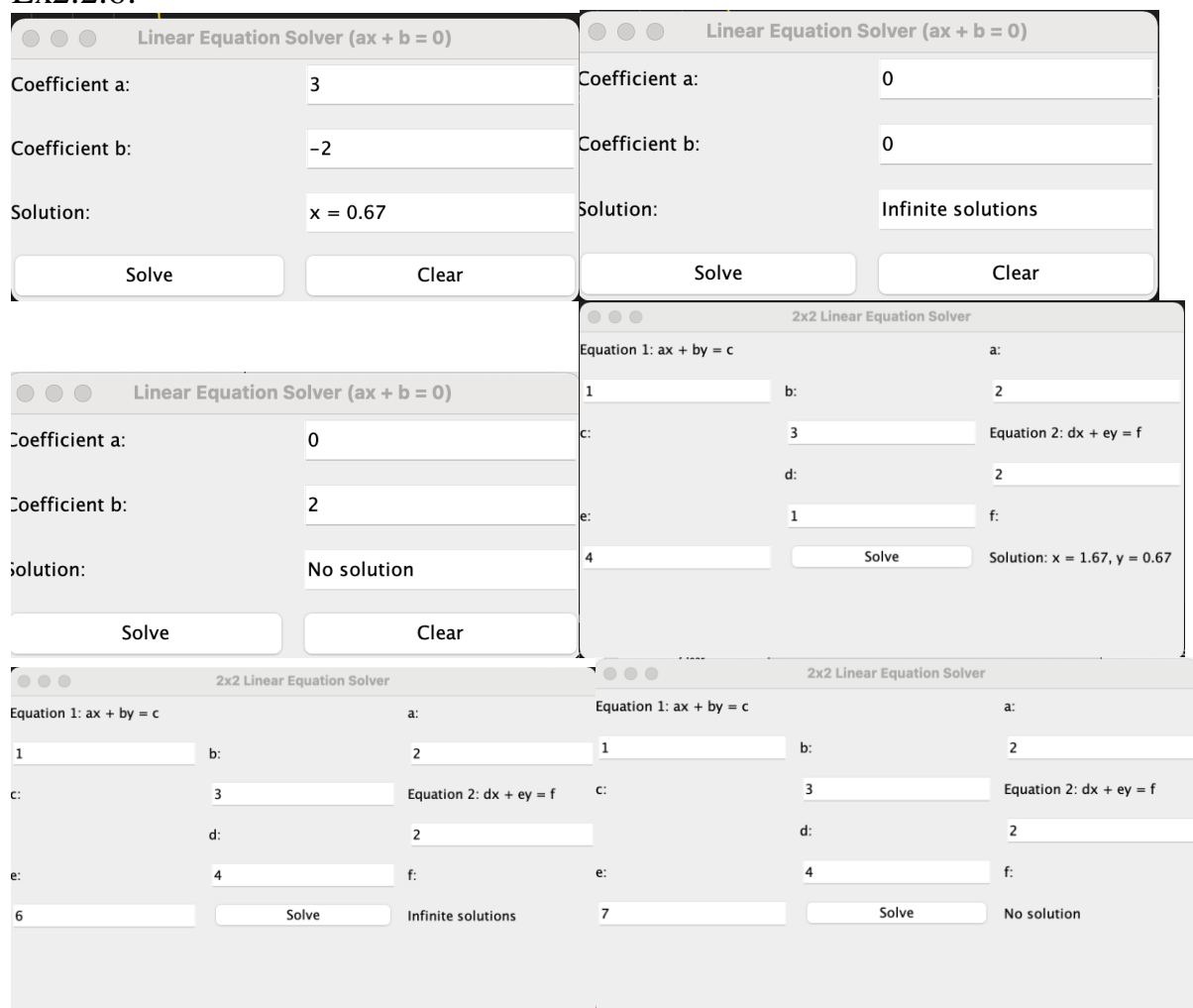
The image displays four screenshots of a Java-based calculator application, each showing a different state of the program. The application has a title bar with three window control buttons (red, yellow, green) and a title 'Calculator'. It contains three input fields: 'First Number:', 'Second Number:', and 'Result:'. Below the input fields are four buttons: 'Sum', 'Difference', 'Product', and 'Quotient'.

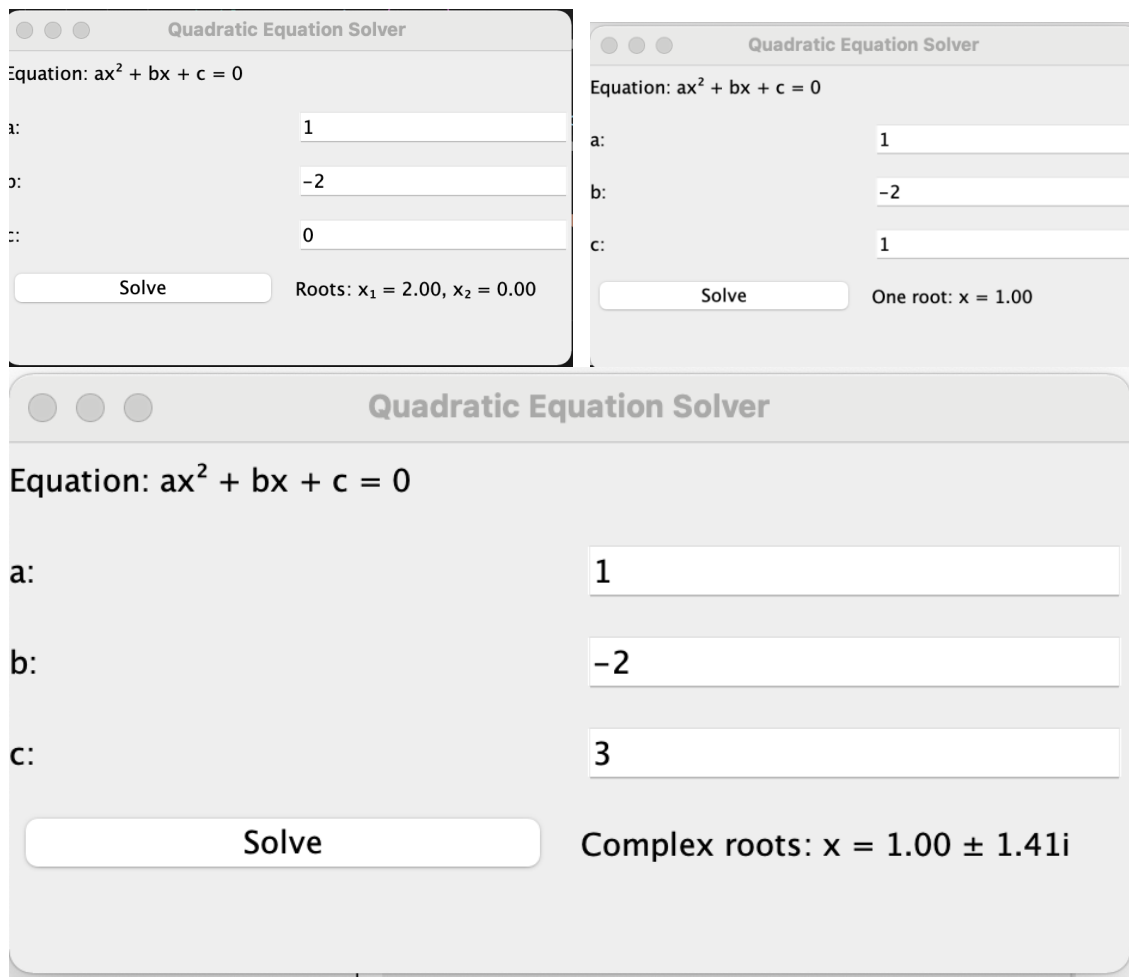
- Top Left Screenshot:** The application is in its initial state. The 'First Number' and 'Second Number' fields are empty. The 'Result' field is also empty. The buttons are visible.
- Top Right Screenshot:** The 'First Number' field contains the value '6' and the 'Second Number' field contains the value '5'. The 'Result' field displays '11.00', indicating the sum of 6 and 5. The buttons are visible.
- Middle Left Screenshot:** The 'First Number' field contains the value '6' and the 'Second Number' field contains the value '5'. The 'Result' field displays '1.00', indicating the product of 6 and 5. The buttons are visible.
- Middle Right Screenshot:** The 'First Number' field contains the value '6' and the 'Second Number' field contains the value '5'. The 'Result' field displays '30.00', indicating the quotient of 6 divided by 5. The buttons are visible.
- Bottom Left Screenshot:** The 'First Number' field contains the value '6' and the 'Second Number' field contains the value '5'. The 'Result' field displays '1.20', indicating the quotient of 6 divided by 5. The buttons are visible.

If the divisor is zero:

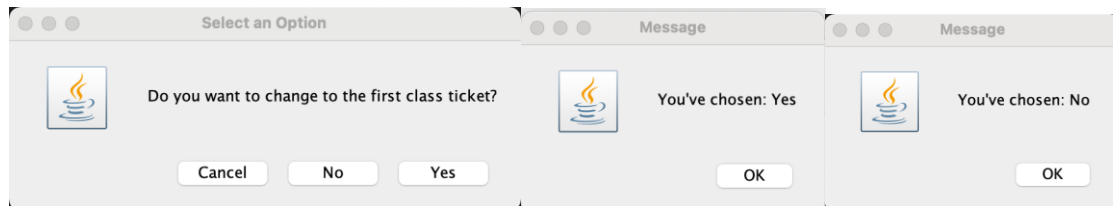


Ex2.2.6:





Ex6.1:



- What happens if users choose “Cancel”?

Trong chương trình, `JOptionPane.showConfirmDialog()` trả về một trong các giá trị

- `JOptionPane.YES_OPTION` (0) nếu chọn Yes
- `JOptionPane.NO_OPTION` (1) nếu chọn No
- `JOptionPane.CANCEL_OPTION` (2) nếu chọn Cancel

Tuy nhiên chương trình chỉ kiểm tra `JOptionPane.YES_OPTION` và coi như các lựa chọn khác là No, khi đó nếu người dùng chọn Cancel thì chương trình sẽ hiển thị “You’ve chosen: No”

How to customize the options to users, e.g. only two options: “Yes” and “No”, OR “I do” and “I don’t”

Mặc định JOptionPane.showConfirmDialog() hiển thị 3 lựa chọn: Yes, No, Cancel.

Để giới hạn chỉ còn hai lựa chọn “Yes”, “No” có thể dùng như sau:

Chỉ hiển thị “Yes”, “No”: Sử dụng JOptionPane.YES_NO_OPTION

Để tùy biến tên nút (ví dụ “I do” và “I don’t”) thay vì Yes/No, truyền một mảng Object[] chứa tên các nút bấm cho showOptionDialog(), hộp thoại hỏi “Do you agree?” với hai nút “I do” và “I don’t”.

Ex6.2

```
f2b17082613b94b300c61b68df/redhat.java/jdt_ws/00P.Lab.20251.202416733.TranTrungPhuc_b78bab73/bin Ex62
● ad@ads-MacBook-Pro 00P.Lab.20251.202416733.TranTrungPhuc % /usr/bin/env /Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/ad/Library/Application\ Support/Code/User/workspaceStorage/673a52f2b17082613b94b300c61b68df/redhat.java/jdt_ws/00P.Lab.20251.202416733.TranTrungPhuc_b78bab73/bin Ex62
What's your name?
Tran Trung Phuc
How old are you?
19
How tall are you (m)?
1.8
Mrs./Ms. Tran Trung Phuc, 19 years old. Your height is 1.8m.
○ ad@ads-MacBook-Pro 00P.Lab.20251.202416733.TranTrungPhuc % 
ad@ads-MacBook-Pro 00P.Lab.20251.202416733.TranTrungPhuc % cd /Users/ad/Documents/GitHub/00P.Lab.20251.202416733.TranTrungPhuc ; /usr/bin/env /Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/ad/Library/Application\ Support/Code/User/workspaceStorage/673a52f2b17082613b94b300c61b68df/redhat.java/jdt_ws/00P.Lab.20251.202416733.TranTrungPhuc_b78bab73/bin Ex62
How old are you?
rgdrt
Exception in thread "main" java.util.InputMismatchException
    at java.base/java.util.Scanner.throwFor(Scanner.java:939)
    at java.base/java.util.Scanner.next(Scanner.java:1594)
    at java.base/java.util.Scanner.nextInt(Scanner.java:2258)
    at java.base/java.util.Scanner.nextInt(Scanner.java:2212)
    at Ex62.main(Ex62.java:8)
ad@ads-MacBook-Pro 00P.Lab.20251.202416733.TranTrungPhuc %
```

Ex6.3

```
f2b17082613b94b300c61b68df/redhat.java/jdt_ws/00P.Lab.20251.202416733.TranTrungPhuc_b78bab73/bin Ex63
● ad@ads-MacBook-Pro 00P.Lab.20251.202416733.TranTrungPhuc % /usr/bin/env /Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/ad/Library/Application\ Support/Code/User/workspaceStorage/673a52f2b17082613b94b300c61b68df/redhat.java/jdt_ws/00P.Lab.20251.202416733.TranTrungPhuc_b78bab73/bin Ex63
Enter the height of the triangle: 6
*
***
*****
*****
*****
*****
○ ad@ads-MacBook-Pro 00P.Lab.20251.202416733.TranTrungPhuc %
```

```

● ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % /usr/bin/env /Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/ad/Library/Application\ Support/Code/User/workspaceStorage/673a52f2b17082613b94b300c61b68df/redhat.java/jdt_ws/OOP.Lab.20251.202416733.TranTrungPhuc_b78bab73/bin Ex63
Enter the height of the triangle: -1
Height must be a positive number.
○ ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % 

```

Ex6.4

```

● ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % /usr/bin/env /Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/ad/Library/Application\ Support/Code/User/workspaceStorage/673a52f2b17082613b94b300c61b68df/redhat.java/jdt_ws/OOP.Lab.20251.202416733.TranTrungPhuc_b78bab73/bin Ex64
Enter month (name/abbr/number): Feb
Enter year (non-negative number): 2025
Number of days in Feb 2025: 28 days
○ ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % 

ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % /usr/bin/env /Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/ad/Library/Application\ Support/Code/User/workspaceStorage/673a52f2b17082613b94b300c61b68df/redhat.java/jdt_ws/OOP.Lab.20251.202416733.TranTrungPhuc_b78bab73/bin Ex64
Number of days in Feb 2025: 28 days
● ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % cd /Users/ad/Documents/GitHub/OOP.Lab.20251.202416733.TranTrungPhuc ; /usr/bin/env /Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/ad/Library/Application\ Support/Code/User/workspaceStorage/673a52f2b17082613b94b300c61b68df/redhat.java/jdt_ws/OOP.Lab.20251.202416733.TranTrungPhuc_b78bab73/bin Ex64
Enter month (name/abbr/number): Feb
Enter year (non-negative number): 2024
Number of days in Feb 2024: 29 days
○ ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % 

ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % cd /Users/ad/Documents/GitHub/OOP.Lab.20251.202416733.TranTrungPhuc ; /usr/bin/env /Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/ad/Library/Application\ Support/Code/User/workspaceStorage/673a52f2b17082613b94b300c61b68df/redhat.java/jdt_ws/OOP.Lab.20251.202416733.TranTrungPhuc_b78bab73/bin Ex64
Enter month (name/abbr/number): 9
Enter year (non-negative number): 578
Number of days in 9 578: 30 days
○ ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % 

ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % cd /Users/ad/Documents/GitHub/OOP.Lab.20251.202416733.TranTrungPhuc ; /usr/bin/env /Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/ad/Library/Application\ Support/Code/User/workspaceStorage/673a52f2b17082613b94b300c61b68df/redhat.java/jdt_ws/OOP.Lab.20251.202416733.TranTrungPhuc_b78bab73/bin Ex64
ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % cd /Users/ad/Documents/GitHub/OOP.Lab.20251.202416733.TranTrungPhuc ; /usr/bin/env /Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/ad/Library/Application\ Support/Code/User/workspaceStorage/673a52f2b17082613b94b300c61b68df/redhat.java/jdt_ws/OOP.Lab.20251.202416733.TranTrungPhuc_b78bab73/bin Ex64
Enter month (name/abbr/number): October
Enter year (non-negative number): 289
Number of days in October 289: 31 days
○ ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % 

ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % cd /Users/ad/Documents/GitHub/OOP.Lab.20251.202416733.TranTrungPhuc ; /usr/bin/env /Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/ad/Library/Application\ Support/Code/User/workspaceStorage/673a52f2b17082613b94b300c61b68df/redhat.java/jdt_ws/OOP.Lab.20251.202416733.TranTrungPhuc_b78bab73/bin Ex64
Enter month (name/abbr/number): 13
Invalid month. Please try again.
Enter month (name/abbr/number): 12
Enter year (non-negative number): -2
Invalid year. Please enter a non-negative number.
Enter month (name/abbr/number): 

```

Ex6.5

```
ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % /usr/bin/env /Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/ad/Library/Application\ Support/Code/User/workspaceStorage/673a52f2b17082613b94b300c61b68df/redhat.java/jdt_ws/OOP.Lab.20251.202416733.TranTrungPhuc_b78bab73/bin Ex65
Choose input method:
1. Enter array manually
2. Use constant array
Enter your choice (1 or 2): 1
Enter number of elements: 4
Enter 4 integers:
3 5 9 7
Sorted array: [3, 5, 7, 9]
Sum: 24
Average: 6.00

ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % cd /Users/ad/Documents/GitHub/OOP.Lab.20251.202416733.TranTrungPhuc ; /usr/bin/env /Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/ad/Library/Application\ Support/Code/User/workspaceStorage/673a52f2b17082613b94b300c61b68df/redhat.java/jdt_ws/OOP.Lab.20251.202416733.TranTrungPhuc_b78bab73/bin Ex65
Choose input method:
1. Enter array manually
2. Use constant array
Enter your choice (1 or 2): 1
Enter number of elements: -3
Exception in thread "main" java.lang.NegativeArraySizeException: -3
    at Ex65.main(Ex65.java:15)

ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % 
ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % cd /Users/ad/Documents/GitHub/OOP.Lab.20251.202416733.TranTrungPhuc ; /usr/bin/env /Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/ad/Library/Application\ Support/Code/User/workspaceStorage/673a52f2b17082613b94b300c61b68df/redhat.java/jdt_ws/OOP.Lab.20251.202416733.TranTrungPhuc_b78bab73/bin Ex65
Choose input method:
1. Enter array manually
2. Use constant array
Enter your choice (1 or 2): 2
Using constant array: [1789, 2035, 1899, 1456, 2013]
Sorted array: [1456, 1789, 1899, 2013, 2035]
Sum: 9192
Average: 1838.40
ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc %
```

Ex6.6

```
ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % /usr/bin/env /Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/ad/Library/Application\ Support/Code/User/workspaceStorage/673a52f2b17082613b94b300c61b68df/redhat.java/jdt_ws/OOP.Lab.20251.202416733.TranTrungPhuc_b78bab73/bin Ex66
Choose input method:
1. Enter matrix values manually
2. Use predefined (constant) matrices
1
Enter number of rows: -2
Enter number of columns: 3
Exception in thread "main" java.lang.NegativeArraySizeException: -2
    at Ex66.main(Ex66.java:16)

ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % 
ad@ads-MacBook-Pro OOP.Lab.20251.202416733.TranTrungPhuc % cd /Users/ad/Documents/GitHub/OOP.Lab.20251.202416733.TranTrungPhuc ; /usr/bin/env /Library/Java/JavaVirtualMachines/jdk-17.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/ad/Library/Application\ Support/Code/User/workspaceStorage/673a52f2b17082613b94b300c61b68df/redhat.java/jdt_ws/OOP.Lab.20251.202416733.TranTrungPhuc_b78bab73/bin Ex66
1. Enter matrix values manually
2. Use predefined (constant) matrices
1
Enter number of rows: 2
Enter number of columns: 3
Enter elements of Matrix A:
A[0][0]: 1 2 3 4 5 6
A[0][1]: A[0][2]: A[1][0]: A[1][1]: A[1][2]: Enter elements of Matrix B:
B[0][0]: 6 5 4 3 2 1
A[0][0]: 1 2 3 4 5 6
A[0][1]: A[0][2]: A[1][0]: A[1][1]: A[1][2]: Enter elements of Matrix B:
B[0][0]: 6 5 4 3 2 1
B[0][1]: B[0][2]: B[1][0]: B[1][1]: B[1][2]: Sum of Matrix A and B:
  7  7  7
  7  7  7
```

Choose input method:

1. Enter matrix values manually
2. Use predefined (constant) matrices

2

Using predefined 3x3 matrices:

Matrix A:

1	2	3
4	5	6
7	8	9

Matrix B:

9	8	7
6	5	4
3	2	1

Sum of Matrix A and B:

10	10	10
10	10	10
10	10	10