Exercise 1:

```
PS C:\Users\Omistaja\Documents\Koulu\C++\VScode Folder\Lab2> ./Lab2_E1
Enter two integers for multiplication (separated by space): 2 10
Integer multiplication (2 * 10): 20

Enter two doubles for multiplication (separated by space): 2.123 2.345345345
Double multiplication (2.123 * 2.34535): 4.97917

Enter an integer and a double for mixed multiplication (separated by space): 5 3.454674

Should the result be rounded? (y/n): y
Mixed multiplication (5 * 3.45467) (rounded): 17
PS C:\Users\Omistaja\Documents\Koulu\C++\VScode Folder\Lab2>
```

Exercise 2:

```
PS C:\Users\Omistaja\Documents\Koulu\C++\VScode Folder\Lab2> ./Lab2_E2
Before any swaps: x = 5.5, y = 10.5

Inside swapBasic: a = 10.5, b = 5.5
After swapBasic: x = 5.5, y = 10.5

After swapUsingPointers: x = 10.5, y = 5.5

After swapUsingReferences: x = 10.5, y = 5.5
PS C:\Users\Omistaja\Documents\Koulu\C++\VScode Folder\Lab2>
```

References and pointers can both be used for swapping. References might be better since they can't be null and the syntax is cleaner. Pointers can still be useful if you have to work with null cases, pointer arithmetic or C code.

Exercise 3:

```
PS C:\Users\Omistaja\Documents\Koulu\C++\VScode Folder\Lab2> ./lab2_E3
Enter first number: 5
Enter second number: 3
Enter operator (+, -, *, /): *
Result: 15
```

Exercise 4:

```
PS C:\Users\Omistaja\Documents\Koulu\C++\VScode Folder\Lab2> ./lab2_E4
Number Squaring Program
Enter numbers (negative to stop):
Enter a number: 69
Square of 69 is 4761
Enter a number: 5
Square of 5 is 25
Enter a number: 0
Zero entered. Skipping...
Enter a number: -2
Negative number entered. Program stopped.
PS C:\Users\Omistaja\Documents\Koulu\C++\VScode Folder\Lab2>
```

Exercise 5:

```
PS C:\Users\Omistaja\Documents\Koulu\C++\VScode Folder\Lab2> ./lab2_E5
Original array: 1 4 7 10 15
Copied array: 1 4 7 10 15
```

Exercise 6:

```
PS C:\Users\Omistaja\Documents\Koulu\C++\VScode Folder\Lab2> ./lab2_E6
Student Record Management System
1. Add Student
2. Display All Students
3. Search Student by ID
4. Exit
Enter your choice: 1
Enter student name: Santeri Hytönen
Enter student ID: 00060
Enter student grade: 2
Student added successfully!

Student Record Management System
1. Add Student
2. Display All Students
3. Search Student by ID
4. Exit
Enter your choice: 2

Student Records:
---------------------------------------
Name: Santeri Hytönen
ID: 60
Grade: 2
---------------------------------------
```

Exercise 7:

```
PS C:\Users\Omistaja\Documents\Koulu\C++\VScode Folder\Lab2> ./lab2_E7
Initial values:
x: 100, *p1: 100, *p2: 100
Addresses: &x=0x61fef4, p1=0x61fef4, p2=0x61fef4

After modifying through p1 (*p1 = 200):
x: 200, *p1: 200, *p2: 200

After modifying through p2 (*p2 = 300):
x: 300, *p1: 300, *p2: 300

After modifying x directly (x = 400):
x: 400, *p1: 400, *p2: 400
```

Changing the value through either pointer affects the same underlying variable

Exercise 8:

```
PS C:\Users\Omistaja\Documents\Koulu\C++\VScode Folder\Lab2> ./lab2_E8
Initial values:
a = 100, refA = 100
Address of a: 0x61fef8, Address of refA: 0x61fef8

After modifying refA (refA = 30):
a = 30, refA = 30

After modifying a directly (a = 50):
a = 50, refA = 50
PS C:\Users\Omistaja\Documents\Koulu\C++\VScode Folder\Lab2>
```

refA is basically a different name for a. They share the same memory address and modifying either affects both.