



EXERCISE III

Go as far as you can!

- 4.1** (*Game: scissor, rock, paper*) Write a program that plays the popular scissor-rock-paper game. (A scissor can cut a paper, a rock can knock a scissor, and a paper can wrap a rock.) The program randomly generates a number **0**, **1**, or **2** representing scissor, rock, and paper. The program prompts the user to enter a number **0**, **1**, or **2** and displays a message indicating whether the user or the computer wins, loses, or draws. Here are sample runs:

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scissor (0), rock (1), paper (2): 1 ↵ Enter
The computer is scissor. You are rock. You won
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scissor (0), rock (1), paper (2): 2 ↵ Enter
The computer is paper. You are paper too. It is a draw
```

- 4.2** (*Validating triangles*) Write a program that reads three edges for a triangle and determines whether the input is valid. The input is valid if the sum of any two edges is greater than the third edge. Here are the sample runs of this program:

4.2 ... continued

Enter three edges: 1 2.5 1 ↵ Enter
Can edges 1, 2.5, and 1 form a triangle? false

Enter three edges: 2.5 2 1 ↵ Enter
Can edges 2.5, 2, and 1 form a triangle? true

4.3 (*Business: checking ISBN*) An **ISBN** (International Standard Book Number) consists of 10 digits $d_1d_2d_3d_4d_5d_6d_7d_8d_9d_{10}$. The last digit d_{10} is a checksum, which is calculated from the other nine digits using the following formula:

$$(d_1 \times 1 + d_2 \times 2 + d_3 \times 3 + d_4 \times 4 + d_5 \times 5 + \\ d_6 \times 6 + d_7 \times 7 + d_8 \times 8 + d_9 \times 9) \% 11$$

If the checksum is **10**, the last digit is denoted X according to the ISBN convention. Write a program that prompts the user to enter the first 9 digits and displays the 10-digit ISBN (including leading zeros). Your program should read the input as an integer. For example, if you enter 013601267, the program should display 0136012671.