INSTRUCTIONS: This assignment contains three problems. Please submit your source code as
follows:

– for Problem 1, write your code in a file named a6trap.cc

– for Problem 2, write your code in a file named a6frame.cc

– for Problem 3, write your code in a file named a6frac.cc

Use the instructions from the course lab page to prepare and submit your files using Moodle. Marks are
assigned for commenting code too.

A) Please use your template.cc file for each of the specified files and then fill in the required information.
   If you do not have a template.cc file please copy the one from the library. The command to copy is:
   "cp $L/samples/template.cc ~/assn". Please see Arie if you have any questions regarding this.

B) Comment your variable declarations except those whose purpose is obvious such as control variables
   for for loops.

C) Comment your functions by specifying the role of the function, of the parameters, and of the return
   value if applicable.

PROBLEM 1: Please write a program that prompts the user to enter three positive integers t, b, and
h. The program outputs a trapezoid of stars (*) with the top base consisting of t stars, the bottom base
consisting of b stars, and the height measuring h stars. Assume $h \geq 2$.

EXAMPLES (the program is executed three times):

```
Please enter the trapezoid data (top bottom height): 2 4 5
**
***
***
****
****

Please enter the trapezoid data (top bottom height): 5 4 5
*****
*****
*****
*****
****

Please enter the trapezoid data (top bottom height): 8 2 5
********
*******
*****
****
**
```

NOTE: The trapezoid need not look exactly as in the examples. However, the following conditions must
be satisfied:

a) the top and bottom bases must consist of t and b stars exactly.

b) the height must be h stars exactly

c) the edge on the right side must reasonably appear straight.

PROBLEM 2: Please write a program that prompts the user to enter a positive integer n. The
program outputs a square frame consisting of n stars.

EXAMPLE:

```
Please enter an integer: 4
```

```
****
*  *
*  *
****
```

PROBLEM 3: A continued fraction is an expression of the form:

$$a_0 + \cfrac{1}{a_1 + \cfrac{1}{a_2 + \cfrac{1}{\ldots + \frac{1}{a_n}}}}$$

where a_i are natural numbers (positive and non-zero).

Write a program that reads from input the sequence of $n+1$ terms followed by a value of zero, $a_n, a_{n-1}, \ldots, a_1, a_0, 0$. The program outputs the value of the continued fraction corresponding to the terms read. The number n of terms is not known in advance.

Please note that the terms are read in *reverse order*. Use I/O manipulators to output the result with a precision of 20 decimal places.

EXAMPLE:

Enter a continued fraction sequence in reverse order (0 to end): 2 2 2 2 2 2 2 2 1 0

Value: 1.41421319796954314540

NOTE: The reverse sequence $2, 2 \ldots, 2, 1$ approximates $\sqrt{2}$ and the reverse sequence $1, 1, \ldots, 1$ approximates the golden ratio. Examine the online resources for other relevant examples.