

# CS 137: Assignment #1

Due on Friday, Sep 20, 2024, at 11:59 PM

Submit all programs using the Marmoset Submission and Testing Server located at  
<https://marmoset.student.cs.uwaterloo.ca/>

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## Notes:

- Use the examples to guide your formatting for your output. Remember to terminate your output with a newline character.
- Integers should be read using `scanf`. You may assume that all inputs are valid.
- You are allowed to use only the syntax/language features that we have covered so far.
- You must NOT use MATH Library.

## Problem 1

Write a program `division.c` that reads two integers to `num` and `denom` and prints the result of integer division (`num/denom`), rounding **away** from zero followed by `\n` character. Assume `denom` is not zero.

Sample Input #1

0 4

Sample Output #1

0

Sample Input #2

2 7

Sample Output #2

1

Sample Input #3

-5 4

Sample Output #3

-2

Sample Input #4

-618 -150

Sample Output #4

5

Sample Input #5

10 6

Sample Output #5

2

## Problem 2

Write a program `pizzas.c` that reads three positive integers to `num_people`, `slices_per_pizza`, and `slices_each`, and prints how many whole pizzas are required to feed `num_people` if each person eats `slices_each` slices, for the given number of `slices_per_pizza`. The printed result is followed by `\n` character.

Sample Input #1

```
1      2      3
```

Sample Output #1

```
2
```

Sample Input #2

```
1      5      1
```

Sample Output #2

```
1
```

Sample Input #3

```
1032    11    14
```

Sample Output #3

```
1314
```

Sample Input #4

```
10      10     10
```

Sample Output #4

```
10
```

### Problem 3

A final grade in CS101 is calculated according to the following category weights:

- Quizzes are worth 5%
- Assignments are worth 20%
- Midterm is worth 30%
- Final exam is worth 45%

To pass the course, the following two conditions must be met, where Q, A, M, and F represent a student's grades for quizzes, assignments, midterm, and final exam respectively (all between 0 and 100, inclusive):

- 1) Students must earn at least 50% based on the standard grade calculation:

$$0.05Q + 0.20A + 0.30M + 0.45F \geq 50$$

- 2) Students must pass the weighted exam average:

$$0.30M + 0.45F \geq 37.5$$

Write a C Program `grades.c` that reads three non-negative numbers between 0 and 100 (inclusive), corresponding to a student's grades on quizzes, assignments, and the midterm exam. The program prints the minimum grade in the final exam rounded down, which will meet both of the required conditions explained above.

**Sample:**

Sample input 1: 80 90 60	Output: 43
Sample input 2: 50 40 30	Output: 67
Sample input 3: 10 5 0	Output: 107

Note that if your program prints a number above 100, as in the last example, that means that the course cannot be passed, as the final exam grade cannot be greater than 100. However, for the purposes of this question, do not make any adjustments to your calculation. The program must print the value needed to meet both requirements (followed by `\n`).