

Assignment 3a Project Plan Group Part

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1. Which project plan did your group decide on?

We have selected the testing plan and the pseudocode written by Anastasiya Sparks.
 Please both below for your reference.

Testing plan:

How many integers would you like to enter?	Please enter integers:	Program output:
1	3	min: 3 max: 3
1	0	min: 0 max: 0
1	-4	min: -4 max: -4
1	347	min: 347 max: 347
1	-487	min: -487 max: -487
1	20	min: 20 max: 20
1	-34	min: - 34 max: -34
1	-2147483648	min: -2147483648 max: -2147483648
1	-2147483647	min: -2147483647

How many integers would you like to enter?	Please enter integers:	Program output:
2	2147483647 2147483647	min: 2147483647 max: 2147483647
2	2147483646 2147483647	min: 2147483646 max: 2147483647
2	-2147483648 -2147483647	min: -2147483648 max: -2147483647
2	-2147483648 2147483647	min: -2147483648 max: 2147483647
2	2147483646 -2147483647	min: -2147483647 max: 2147483646
3	1 15 45	min: 1 max: 45
3	678 0 14	min: 0 max: 678
3	1 1 1	min: 1 max: 1
3	588	min: 0

		max: -2147483647
1	2147483647	min: 2147483647 max: 2147483647
1	2147483646	min: 2147483646 max: 2147483646
2	1 3	min: 1 max: 3
2	546 578	min: 546 max: 578
2	0 0	min: 0 max: 0
2	78 0	min: 0 max: 78
2	0 -6	min: - 6 max: 0
2	-678 0	min: - 678 max: 0
2	1 1	min: 1 max: 1
2	-7 -7	min: - 7 max: -7
2	-6 -479	min: - 478 max: -6
2	-78 357	min: - 78 max: 357

	0 588	max: 588
3	-40 40 400	min: -40 max: 400
3	-7 -7 -7	min: -7 max: -7
3	0 0 0	min: 0 max: 0
3	-789 -56 -4	min: -789 max: -4
3	-69832 67 -2	min: -69832 max: 67
3	-2147483648 2147483647 -2147483647	min: -2147483648 max: 2147483647
3	2147483646 2147483647 -2147483647	min: -2147483647 max: 2147483647
5	-6 -56 -34 -567 -797 -2867	min: -2867 max: -6
6	0 0 0 0 0 0	min: 0 max: 0
7	4 78 954 2423 5 8 99	min: 4 max: 2423
7	0 -5 -35 78 2147483647 -3333 -2147483648	min: -2147483648 max: 2147483647
15	0 -456 -66 3456 77	min: -2147483648 max: 2147483647

2	9754 -6870	min: - 6870 max: 9754

	0 -22222 -4 2147483647 -2147483648 0 -77 77 99 1	
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Pseudocode:

Declare variable number as integer

Set minimum value of integer to 2147483647

Set maximum value of integer to -2147483648

Input total number of integers

For total number of integers

Input number

Check if number is less than or equal to minimum

Set minimum value to that number

Check if number is more than or equal to maximum

Set maximum value to that number

Print minimum and maximum values

2. What advantages do you think that project plan has over the others?

Testing plan:

This testing plan was chosen due to its systematic approach that extensively tests the program for possible errors. The testing plan's strategy incorporates a variety of input possibilities based on the total number of integers entered, actual integers and the expected outcome.

In terms of the total amount of integers a user chooses to input, the testing plan covers a scenario of 1 to 15 integers. When entering one integer, various cases of positive, negative, zero, extremely high and low number inputs are covered. The testing plan also incorporates testing edge values of integer range (-2147483648 and 2147483647) and close to edge values (-2147483647 and 2147483646).

In case when a user chooses to enter multiple integers, the following test scenarios are covered:

- only positive or only negative integer input
- multiple input of zero values
- combination of positive, negative and zero values
- identical single digit integer values
- identical multi digit integer values
- combinations of ascending or descending values
- random multiple digit values
- extremely high or low numbers
- integer edge values and close to edge values

This testing plan appeared to represent the most inclusive combination of input possibilities and therefore the best chance of catching logical errors in the program.

Pseudocode:

There are several positive things about this project plan that are missing in other plans. First, everything required of the program is accomplished without any excess code. Each line has a purpose, and together they deliver the correct output. Second, sections are visually separated based on their role in the program. It is easy to recognize the order as: initialization, determine loop size, receive all user input, print the answer. Third, it is straightforward to translate the pseudocode into actual code. It's not written in C++ syntax (as required by pseudocode), but the steps are clearly stated and leave no room for interpretation when writing the actual code.

3. What improvements do you think could be made to that project plan?

Testing plan:

The testing plan did not include cases when a user decides to input a very high number of integers (i.e. more than 100 integers) and was limited to testing input of 15 integers total. Another possible testing scenario to consider would be testing alternating positive/negative numbers of the same value (e.g. 45, 13, 45, 13) or (e.g. -57, -72, -57, -72).

Pseudocode:

The minimum and maximum values are initialized at upper and lower limits for the data type (2147483647 and -2147483648, respectively). These values are designed to be hard-coded into the program. Based on material covered in class so far, this will operate correctly and produce the expected outcome. However, this logic is contingent upon knowing correct values of the integer range that were set to min and max. Using for example `numeric_limits` class to initialize these values could have been a better alternative, yet not an available option considering the scope of this project. There is also a aesthetic improvement that can be made: indenting the lines of the second "if" statement as a nested one.