

CSC 160 LAB 9-2 PROBLEM SOLVING AND PROGRAMMING SKILLS

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1. HIGHEST POWERS OF A FACTOR IN A NUMBER

Write a method

```
static int power(int number, int factor)
```

that returns the highest power of a factor in a number. If the factor does not divide the number, then the highest power of the factor in the number is 0.

Write a program that has a loop that tests your method by looping 5 times. Each iteration of the loop asks the user to enter a positive number and a possible factor. It then calls the method you wrote to determine the highest power of the factor in the number and prints the result. Your output should look like this.

```
Enter a positive number: 100
Enter a possible factor: 5
Highest power of 5 in 100 is 2
Enter a positive number: 100
Enter a possible factor: 2
Highest power of 2 in 100 is 2
Enter a positive number: 405
Enter a possible factor: 3
Highest power of 3 in 405 is 4
Enter a positive number: 405
Enter a possible factor: 7
Highest power of 7 in 405 is 0
Enter a positive number: 405
Enter a possible factor: 5
Highest power of 5 in 405 is 1
```

2. PRELUDE TO SORTING

Comment out the code for section 1, but do not delete it as it will need to be submitted for grading.

Write a method

```
static int minPos(int [] arr, int lower)
```

that returns the position of the minimum value in the portion of the array that goes from `lower` to the end of the array.

Test your method by creating a random array of 10 integers, printing the array out, and then calling your method to print the positions of the minimum value

in decreasing shrinking “tails” of the array. This just means that you print the position of the minimum in the part of the array from

- (1) position 0 to the end to the end of the array,
- (2) position 1 to the end to the end of the array,
- (3) position 2 to the end of the array, and so on.

Create your arrays so that the random values stored in the array are positive integers less than 100.

To print an array `arr`, use the `Arrays.toString(arr)` method instead of writing your own array printing method.

Here is a sample to show what your output should look like

```
Here is the random array: [64, 76, 57, 8, 43, 78, 55, 51, 41, 18]
The minimum value in positions 0 to 9 is 8 at position 3
The minimum value in positions 1 to 9 is 8 at position 3
The minimum value in positions 2 to 9 is 8 at position 3
The minimum value in positions 3 to 9 is 8 at position 3
The minimum value in positions 4 to 9 is 18 at position 9
The minimum value in positions 5 to 9 is 18 at position 9
The minimum value in positions 6 to 9 is 18 at position 9
The minimum value in positions 7 to 9 is 18 at position 9
The minimum value in positions 8 to 9 is 18 at position 9
The minimum value in positions 9 to 9 is 18 at position 9
```

And here is another sample run:

```
Here is the random array: [72, 48, 17, 86, 51, 56, 7, 76, 79, 80]
The minimum value in positions 0 to 9 is 7 at position 6
The minimum value in positions 1 to 9 is 7 at position 6
The minimum value in positions 2 to 9 is 7 at position 6
The minimum value in positions 3 to 9 is 7 at position 6
The minimum value in positions 4 to 9 is 7 at position 6
The minimum value in positions 5 to 9 is 7 at position 6
The minimum value in positions 6 to 9 is 7 at position 6
The minimum value in positions 7 to 9 is 76 at position 7
The minimum value in positions 8 to 9 is 79 at position 8
The minimum value in positions 9 to 9 is 80 at position 9
```

3. TURNING THE LAB IN

Uncomment the previously commented code and submit for grading. This lab is due Monday of Week 10.