

CSCI 1312 (Introduction to Programming for Engineering), Fall 2018

Quiz 4 Solution

Consider the following C program:

```
#include <stdio.h>
#define ARRAYSIZE 10
int main(void) {
    int nums[ARRAYSIZE];
    printf("enter some integers, anything else to stop\n");
    int count = 0;
    int input;
    while (scanf("%d", &input) == 1) {
        if (count < ARRAYSIZE) {
            nums[count] = input;
            count++;
        }
    }
    for (int i = count-1; i >= 0; i--) {
        printf("%d\n", nums[i]);
    }
    return 0;
}
```

1. (6 points) What does it print if the user enters the following lines of text?

```
1
3
2
4
x
```

Solution: The following will be printed:

```
4
2
3
1
```

I.e., it prints the input in reverse order: The `while` loop stores them in order, and the `for` loop prints them in reverse order. (Strictly speaking the program also prints its prompt, before the above lines, but it's okay to leave that out since it's not really the point.)

2. (2 points) Is there a maximum number of lines this program will print, not including the prompt? If so, what?

Solution: It will print at most 10 lines. Notice that the variable `count` is meant to represent a count of values read: Initially it is zero, and every time a value is successfully read, this variable is used as an index for storing the value in the array (keeping in mind that indices in C are zero-based) and then incremented so that once again it represents how many values have been read.

3. (2 points) Inside the loop to read input, the program tests the value of `count`. What could happen if this test were removed?

Solution: If the user entered more than 10 values, they would overflow the array, with unpredictable and possibly undesirable results.