Matt Ronan 2/4/20

Algorithms Assignment 1

Section 1 Question 1:

English: First, we would create a variable “rev” to hold the reverse of the input and set it to 0. Next, we would run a while loop until the number input into the method was equal to 0. Then we multiply rev by 10 and add the mod of the input to it. After that, we divide the input by 10. When the loop is finished we return rev and have our reversed number.

Pseudocode:

int rev = 0; int input = user input;

while(input not 0)

rev = rev \*10 + input % 10;

input = input / 10;

end while

return rev;

Section 1 Question 2:

English: First we must sort the array of integers in ascending order. Then we loop through the array and check to see if the index of the array + 1 is equal to the value stored in that index. If it is not we return that value.

Pseudocode:

Input.sort() //sorts array

For (i = 0; i < n; i++)

If(input[i] == i + 1)

End if

Else

Return input[i];

End for

Section 1 Question 3:

English: To find if there a majority in the sorted array we must loop through the array checking the first element and the (n/2)th element. If these values are equal then we return the value, if not we add 1 to both values and check their equality again. If there is not majority element we return that there was not majority.

Pseudocode:

Int window = n/2;

For(i = 0; I <n/2; i++)

If(input[i] == input[window])

Return input[i];

End if

Else if(window == input.length())

Return “There is no majority element”;

End else if

Else{}

End else

End for