TEE2101/TE2101 Programming Methodology

Laboratory Exercise (LAB-II)

Name:

Matriculation Number:

Date submission due: Tuesday 15 March 2022 (1 week from your lab day) VIA LumiNUS – "Lab 2 Student Submission Folder"

Grading: Your assignment will be graded out of 50 marks and the final weight of this assignment is 15%.

Please adhere to the guidelines.

Guidelines to be followed while writing Report and submission

1. Please prepare the report in **PDF format** only.
2. Sign the declaration form (attached in this template).
3. **Add THIS report file and your working C code into one folder**. Submit the folder as a compressed "**zip**" file.
    - For the code file, please submit your **.c file(s) only**, not the whole Visual Studio project folder (if you use MS. Visual Studio).
4. Submitted **zip file name** should be in the following format.
    - MATRICULATION_NUMBER_ASSIGNMENT2_NAME (First Name).zip
    - Example: A0066493U_ASSIGNMENT1_SEUNGMIN.zip
5. We do not mark your submission if the submission does not follow the above format.

You are expected to follow the guidelines given below. These also carry marks:

1. Use meaningful variable names while programming. It's a good practice to develop good programming skills and enables readability.
2. Explain the code with proper comments; Comments must be meaningful and descriptive.
3. Please adhere to the report deadlines and any late submissions are not accepted.
4. Please sign the declaration form (Page 2). We do not mark your submission if this form is not signed.

What you need to submit? - YOUR OUTPUT:

Paste the screenshot of your code and output. Draw the flow chart as required.

Assignment Declaration Form

Please read sections A, B and C below. Sign and submit this declaration form together with your answers.

A. Academic, Professional and Personal Integrity

1. *The University is committed to nurturing an environment conducive for the exchange of ideas, advancement of knowledge and intellectual development. Academic honesty and integrity are essential conditions for the pursuit and acquisition of knowledge, and the University expects each student to always maintain and uphold the highest standards of integrity and academic honesty.*

2. *The University takes a strict view of cheating in any form, deceptive fabrication, plagiarism and violation of intellectual property and copyright laws. Any student who is found to have engaged in such misconduct will be subject to disciplinary action by the University.*

3. *It is important to note that all students share the responsibility of protecting the academic standards and reputation of the University. This responsibility can extend beyond each student' s own conduct and can include reporting incidents of suspected academic dishonesty through the appropriate channels. Students who have reasonable grounds to suspect academic dishonesty should raise their concerns directly to the relevant Head of Department, Dean of Faculty, Registrar, Vice Provost or Provost.*

B. I have read and understood the rules of the assessments stated below:

a. *Students should attempt the assessments on their own. There should be no discussion or communication, via face to face or communication devices, with any other person during the assessment.*

b. *Students should not reproduce any assessment materials, e.g., by photograph y, videography, screenshots, copying down of questions, etc. Posting on public frums, e.g., social media and websites, is prohibited.*

C. I understand that by breaching any of the rules above, I would have committed offences under clause 3(1) of the NUS Statute 6, Discipline with Respect to Students, which is punishable with disciplinary action under clause 10 or clause 11 of the said statute.

3) *Any student who is alleged to have committed or attempted to commit, or caused or attempted to cause any other person to commit anyof the following offences, may be subject to disciplinary proceedings:*

(I) *plagiarism, giving or receiving unauthorized assistance in academic work, or other forms of academic dishonesty.*

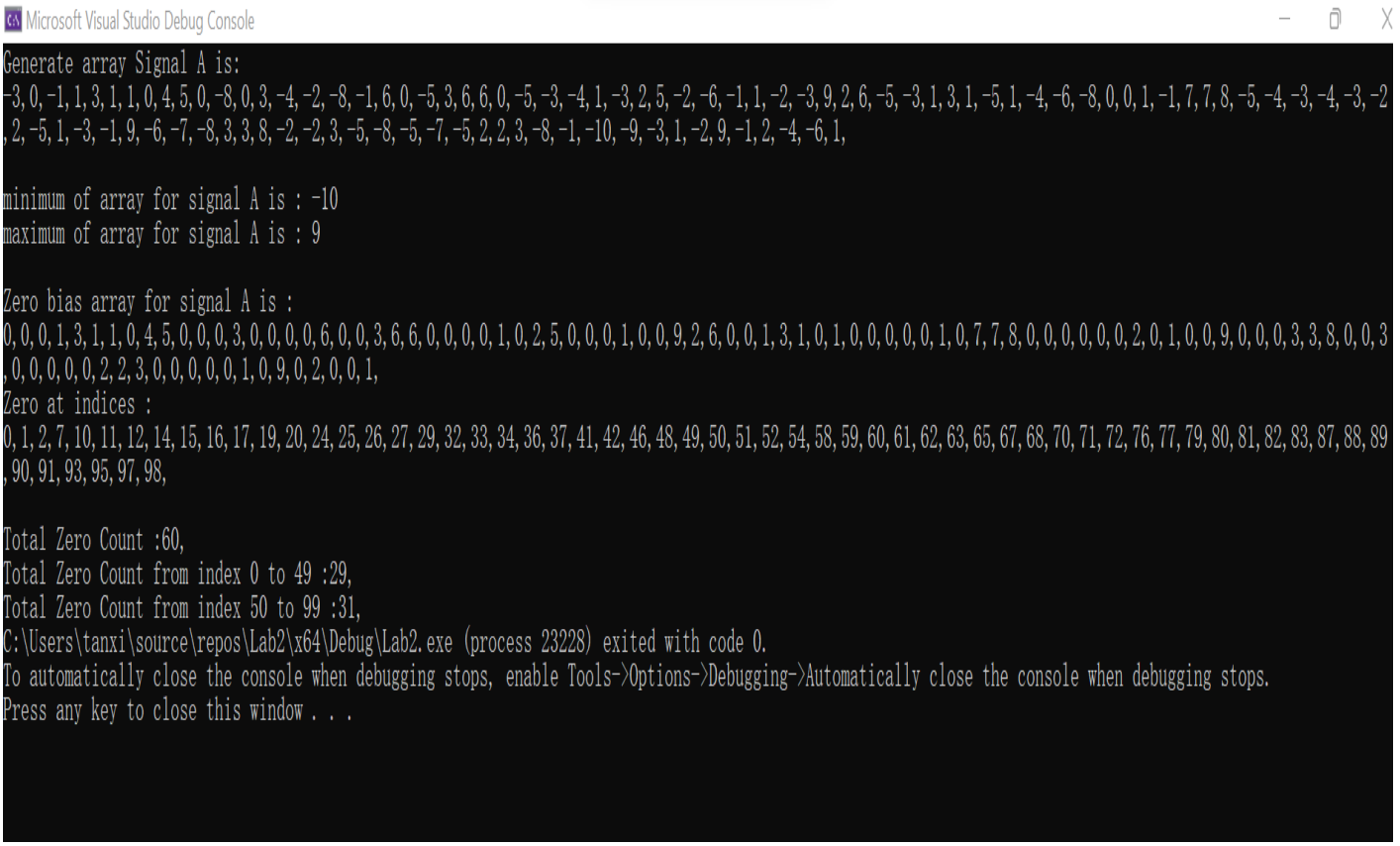
I have read and will abide by the NUS Code of Student Conduct (in particular, (A) Academic, Professional and Personal Integrity), B and C when attempting this assessment.

Signature: _____ **Date: 03/13/2022**

Matric. No: __A0245336E_____

NOTE: Start your answers from here. Use as much space as needed.

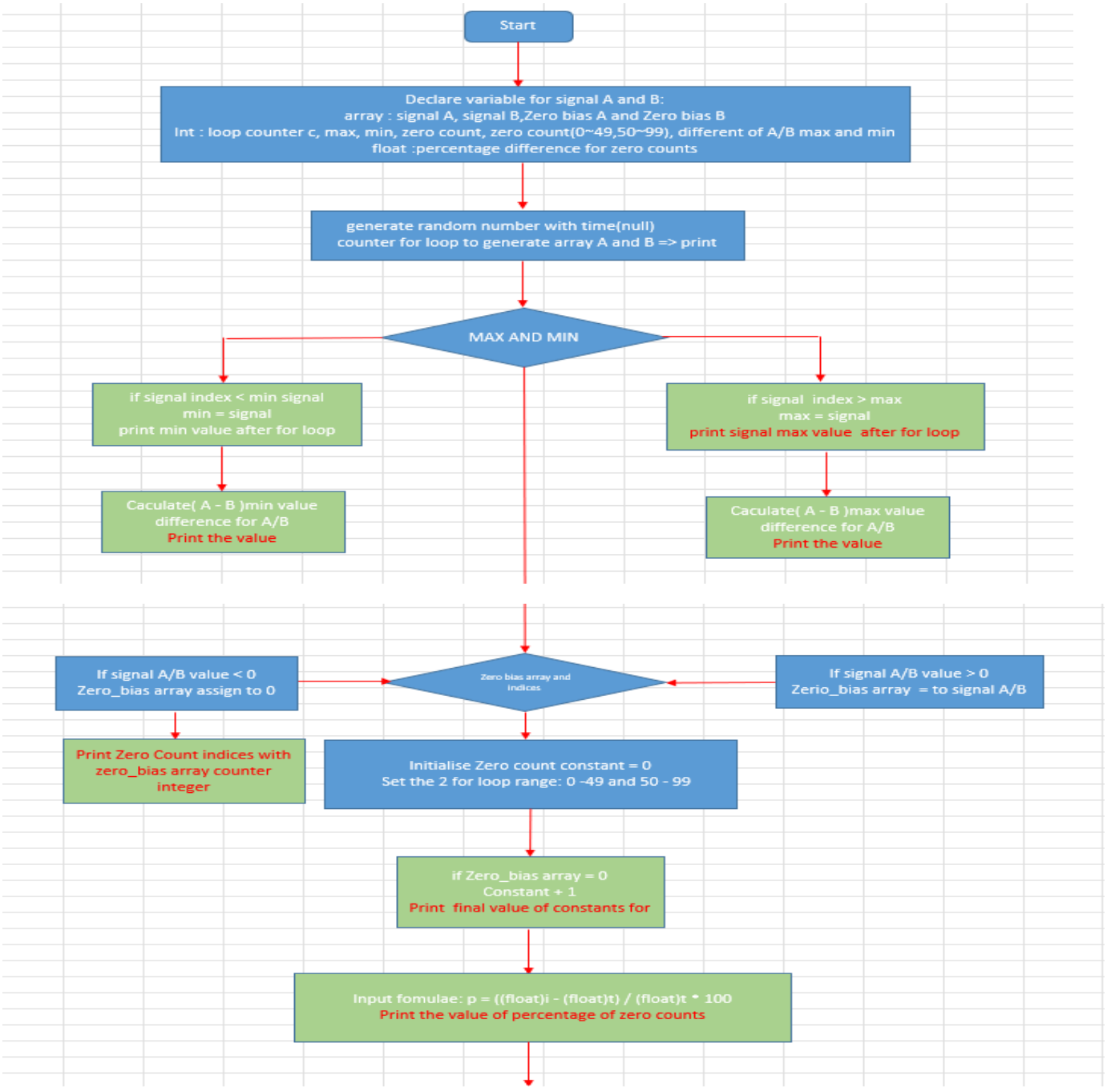
PART A OUTPUT:

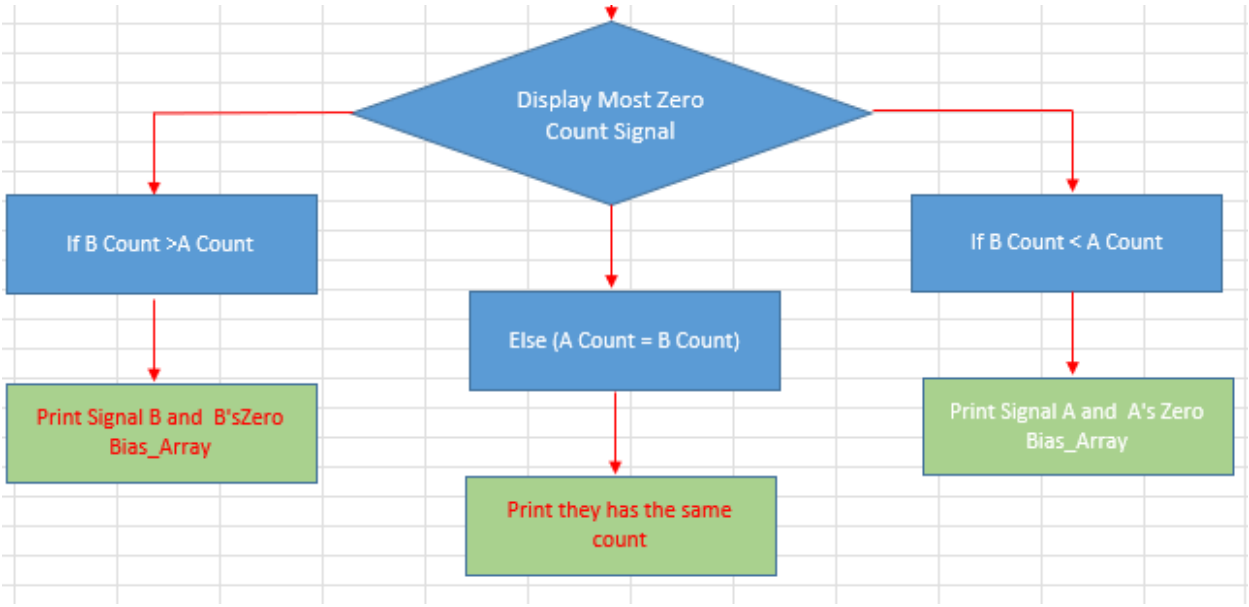


Part B OUTPUT:

```
Generate array Signal A is:
1, -3, 0, -6, 2, 3, 2, -2, -7, -7, -4, -1, 7, -4, -4, -1, 0, -9, 1, -2, -8, 1, 2, 0, 1, 0, -2, 0, 6, 3, 3, 5, 7, -5, 1, -1, -5, 6, 4, 8, -8, -3, 4, 3, 3, 1, 8, -3, -2, 2, 1, 1, -2, 4, 3, -10, 3, 0, -4, 0, -2, -5, 1, -1, 2
, -1, 2, 1, 6, -2, -5, 1, 0, 0, 1, -7, -1, 4, -4, -4, 5, -2, -3, 1, -2, 2, -3, 6, 9, 0, 0, -1, 3, 4, -1, 3, 6, 2, -5, -3,
Generate array Signal B is:
8, 8, 0, 4, 10, -6, -8, -3, 5, -3, 1, 1, 4, -1, 3, -2, 3, -6, -1, -2, -1, -1, 0, -2, 1, -7, -5, -1, -4, 1, -9, -3, 5, -8, 2, 0, 6, 5, -1, 4, 2, 5, 0, 1, -4, 6, -4, -1, -10, -2, 2, -4, -2, -2, -3, 3, 1, 2, -3, 0, -1, -3
, 7, -2, -4, -3, 4, 6, -2, -5, 3, -1, 9, -5, 4, 7, -2, -6, 2, -5, 7, -2, -2, -6, -1, 4, -6, -8, 4, -1, -3, -7, -5, 1, -6, 0, -6, 3, 1, 7,

maximum of array for signal A is : 9
minimum of array for signal A is : -10
maximum of array for signal B is : 10
minimum of array for signal B is : -10

Zero bias array for signal A is :
1, 0, 0, 0, 2, 3, 2, 0, 0, 0, 0, 0, 7, 0, 0, 0, 0, 0, 1, 0, 0, 1, 2, 0, 1, 0, 0, 0, 6, 3, 3, 5, 7, 0, 1, 0, 0, 6, 4, 8, 0, 0, 4, 3, 3, 1, 8, 0, 0, 2, 1, 1, 0, 4, 3, 0, 3, 0, 0, 0, 0, 0, 1, 0, 2, 0, 2, 1, 6, 0, 0, 1, 0, 0, 1, 0, 0, 4, 0
, 0, 5, 0, 0, 1, 0, 2, 0, 6, 9, 0, 0, 0, 3, 4, 0, 3, 6, 2, 0, 0,

Zero bias array for signal B is :
8, 8, 0, 4, 10, 0, 0, 0, 5, 0, 1, 1, 4, 0, 3, 0, 3, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 1, 0, 0, 5, 0, 2, 0, 6, 5, 0, 4, 2, 5, 0, 1, 0, 6, 0, 0, 0, 0, 2, 0, 0, 0, 0, 3, 1, 2, 0, 0, 0, 0, 7, 0, 0, 0, 4, 6, 0, 0, 3, 0, 9, 0, 4, 7, 0, 0,
2, 0, 7, 0, 0, 0, 0, 4, 0, 0, 4, 0, 0, 0, 0, 0, 1, 0, 0, 0, 3, 1, 7,

Zero at indices for signal A:
1, 2, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 19, 20, 23, 25, 26, 27, 33, 35, 36, 40, 41, 47, 48, 52, 55, 57, 58, 59, 60, 61, 63, 65, 69, 70, 72, 73, 75, 76, 78, 79, 81, 82, 84, 86, 89, 90, 91, 94, 98, 99,

Zero at indices for signal B :
2, 5, 6, 7, 9, 13, 15, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 30, 31, 33, 35, 38, 42, 44, 46, 47, 48, 49, 51, 52, 53, 54, 58, 59, 60, 61, 63, 64, 65, 68, 69, 71, 73, 76, 77, 79, 81, 82, 83, 84, 86, 87, 89,
90, 91, 92, 94, 95, 96,

Total Zero Count for signal A:53,
Total Zero Count for signal B:60,
Total Zero Count from index 0 to 49 for signal A :26,
Total Zero Count from index 0 to 49 for signal B :29,
Total Zero Count from index 50 to 99 for signal A:27,
Total Zero Count from index 50 to 99 for signal B:31,

Zero Count Percentage difference of signal A and B:-11.667%

Signal wtih more zero from 0~49 indices:
Singal B:8, 8, 0, 4, 10, 0, 0, 0, 0, 5, 0, 1, 1, 1, 4, 0, 3, 0, 3, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 1, 0, 0, 5, 0, 2, 0, 6, 5, 0, 4, 2, 5, 0, 1, 0, 6, 0, 0, 0, 0,
Signal wtih more zero from 50~99 indices:
Singal B:2, 0, 0, 0, 0, 3, 1, 2, 0, 0, 0, 0, 7, 0, 0, 0, 4, 6, 0, 0, 3, 0, 9, 0, 4, 7, 0, 0, 2, 0, 7, 0, 0, 0, 0, 4, 0, 0, 4, 0, 0, 0, 0, 0, 1, 0, 0, 0, 3, 1, 7,
```

Block Diagram:




Display Most Zero Count Signal
If B Count >A Count
Else (A Count = B Count)
If B Count < A Count
Print Signal B and B'sZero Bias_Array
Print they has the same count
Print Signal A and A's Zero Bias_Array