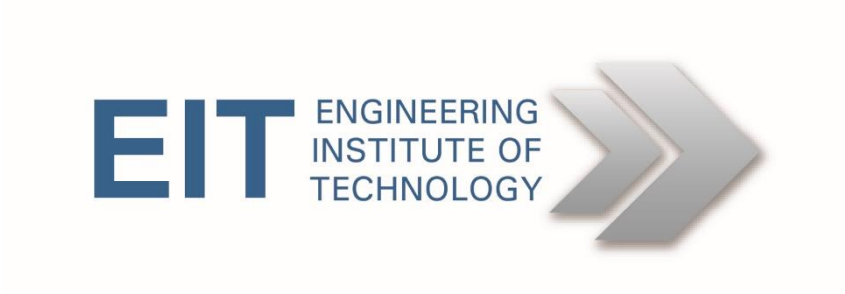

Bachelor of Science (Engineering)

BSC201C: Engineering Programming

Assessment 3
Paper B
Version 3

Created by:	Steve Steyn	Date:	3rd Jan 2019
Reviewed by:	Steve Steyn	Date:	10th Aug 2019

Assessment Task Instructions:

1. To allow for unforeseen circumstances such as illness, work or family commitments, it is advisable that you aim to complete the assignment a few days before the due. It is your responsibility to ensure that you factor in any time difference between Perth, Western Australia and your location when submitting assessments.

2. Extension requests must be formally submitted by completing an extension request form and emailing the form to your unit coordinator along with a medical certificate or other supporting documentations.

3. Only one (1) file can be submitted. Supplementary or additional appendices must be clearly titled and directly linked or mentioned within your written assessment and submitted in the Supplementary Submission Box. Should the assessor not be able to clearly link these documentations back to your main assignment, penalties may apply.

4. You must use the provided Assignment Cover Page document and submit your main written assessment in WORD FORMAT only. The only permissible file formats are **.docx or .doc** and you should not 'embed' other files as pictures within the word document.

5. You must save your document in WORD FORMAT and ensure the title is as follows:

   COURSECODE_UNIT#_ASSIGNMENT#_VERSION#_YOURNAME_DATE

   E.g. BSC201C_Assessment3_v1_BobBrown_01Oct2019

6. You must reference all content used from other sources. Do not copy and paste from course materials or any other resources or quote other source without referencing.

7. Assignments submitted through emails or any other methods will NOT be accepted.

8. You must ensure that you have submitted the correct file. Once you have submitted, you will not be able to re-submit a second attempt after the due date.

9. **Important Note**: Failure to adhere to these requirements may result in a zero grade. Please refer to the unit outline or *EIT Policies & Procedures* if you are unsure how to reference.

BSC201C: Engineering Programming

Assessment 3 – Project

Weight: 30%
Total marks: 40 marks

Please complete your answers in the provided Assessment Answer Sheet/Cover page in Moodle.

Clearly label your question numbers on your answer sheet (no need to copy the questions over). Include all working out.

Question 1: **(3 marks)**

Correct the following **for** loop.

```
for (i == 0; i < last; k++) {
}
```

Question 2: **(3 marks)**

List the functions used to:

a) OPEN a file, [1 Marks]

b) Write/print to a file (in append mode), [1 Marks]

c) CLOSE a file, [1 Marks]

Question 3: **(4 marks)**

Propose an algorithm to generate random numbers and store each value as an entry in an array.

Question 4: **(30 marks)**

This problem contains loops, sorting arrays, random generation, and variable matching.

Include an analysis (data requirements) and algorithm in your reply.

Write a "lottery engine" program to simulate drawing lottery numbers. You will draw **7 numbers**, **randomly selected from 1 to 16.**

a) Allow the user to enter their own selection of numbers first,

   Example numbers: 2 3 7 9 10 11 15

b) then run your "lottery engine" to select the "winning numbers". Numbers are drawn randomly.

   Use the clock as the seed value for your random function (Hint: use "**srand(clock());**").

c) Be sure to remove duplicate entries.

d) Print out the draw result as it was generated (unsorted), then sort the array and print out the sorted numbers.

   Example output:

   "

   Draw unsorted: 2 12 16 14 7 13 1

   Draw sorted: 1 2 7 12 13 14 16

   "

e) Then print out the matching numbers selected by the user:

f) Also print the **sorted user selection and draw results and matching numbers** to a TXT file called "Results.txt".

   Example output

   "

   Draw sorted: 1 2 7 12 13 14 16

   User's sorted: 2 3 7 9 10 11 15

   Matching numbers: 2 – 7

   "

END OF ASSESSMENT