Click or tap here to enter text.Click or tap here to enter text. Click or tap here to enter text.@mySeneca.ca  
Click or tap here to enter text.

*There are many notes in the instructions to help you earn marks for the questions below.*

Exercise One of Two – **integer overflow** (80 points)

🡺 1. (5 points) Using your student number *in reverse sequence* as the number of **seconds**,  
 how many **days** will it take until that value is reached? (rounded to two decimal places)

🡺 2. (20 points) Using your student number *in reverse sequence* as the number of seconds,  
 how much **time** would that represent in whole numbers   
 of years, then the remaining days, then hours, then minutes, then seconds?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **??** | **??** | **??** | **??** | **??** |
| **YEARS** | **DAYS** | **HOURS** | **MINUTES** | **SECONDS** |

🡺 3. (5 points) What 16-bit signed integer [short] is the smallest positive value that,   
 when multiplied by 2, would cause overflow?

🡺 4. (5 points) What 16-bit signed integer [short] is the largest negative value that,   
 when multiplied by 2, would cause overflow?

Binary Search Bug

5. 🡺 (10 points) What can go wrong with this **(low + high) / 2** calculation?

6. 🡺 (10 points) CORRECT themidcalculation to prevent the possibility of overflow*from*mid = (low + high) / 2;*to*  **mid = ;**

7. 🡺 (25 points)Whatsteps did you use to develop and test your solution to the calculation bug? Write a 250+ word “reflection”(similar to a workshop in your programming class).

Exercise Two of Two – **Numbering Systems and Conversions (20 points)**

8. 🡺 (8 points ) Fill in this chart as per the column headings

|  |  |  |  |
| --- | --- | --- | --- |
| Red decimal | Green decimal | Blue decimal | **Hex triplet** |
| 208 | 13 | 30 |  |
| 186 | 187 | 30 |  |
| 15 | 245 | 231 |  |
| 192 | 255 | 238 |  |

9. 🡺 (12 points)Fill in this chart as per the column headings and…

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Hex triplet | **Red decimal** | **Green decimal** | **Blue decimal** | Change each row's Font  colour to match the RGB value |
| #09E902 |  |  |  | 🡨 this row's Font colour matches Hex/RGB |
| #E8B002 |  |  |  | 🡨 this row's Font colour matches Hex/RGB |
| #D64A54 |  |  |  | 🡨 this row's Font colour matches Hex/RGB |
| #529EE4 |  |  |  | 🡨 this row's Font colour matches Hex/RGB |