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| **EL-2003: Computer Organization and Assembly Language Lab – BS(CS)** |
| Tuesday, 17th October, 2023 |
| **Lab Instructor** |
| Asfandyar Sabri |

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**Instructions:**

1. Read all the instructions carefully.
2. **You will only attempt this exam if your roll no ends in ODD number.**
3. Make sure to write **name, rollno, section and signature (**write your name again) on this doc file. You will submit it alongside code.
4. Make sure to write your **name and roll no on top of code file in comments**. Files missing name and roll no will not be marked and will be given a zero.
5. After asked to commence the exam, please verify that you have a total of **3** questions.
6. You will make only one code file **format(i22-1234\_Sessional.asm)** and attempt all of questions inside it (You may comment previous questions if there are errors or something).
7. Attempt all of the questions. Read the question carefully, understand the question, and then attempt it.
8. You are not allowed to open Gmail, chat communication service or any other website over internet during exam. If already opened, make sure to close it before starting the exam. Anyone found browsing any website will result in F grade.
9. Write one good and bad thing about me which you have noted so far. It could be anything, my teaching style, my personality etc. Write that in comments at top of your code file. (5 Marks)
10. Your final submission will be a zip folder on google classroom containing **filled** **question paper** and .asm file. **FORMAT i22-1234\_Sessional.zip.**

**Question 1 [20 Marks]**

Write an assembly program to sort an array. Define a random array of 10 elements in data section and then sort it.

**Question 2 [20 Marks]**

Write an assembly program that takes power of a given number. The power and number are defined in data section. Make sure to cater base conditions as well (power 0). The maximum result limit is: 2 power 16 or 65535.

**Question 3 [10 Marks]**

**(Write in comments in code file)**

1. When is overflow flag set? Explain and write an example. (5)
2. Briefly describe how negative numbers work in assembly. Give an example. (5)

**BEST OF LUCK:’)**