# Lab 2 Stress Concentration

Section 4 Group 2 Date: 02/01/2023
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1. (10 points) Describe stress concentration in your own words.
2. (10 pts) Define the stress concentration factor as is used in this course.
3. (10 pts) To your best knowledge, why there are so many holes/cutoffs in the wing structure as seen on page 2 of the lecture notes?

Total 30 points

Answer

1. Stress concentration is the build of stress in localized regions of a material based on the direction of loading and the shape of the material. A good analogy would be an interstate: if traffic flows well with four lanes of traffic and suddenly the two outside lanes are closed, there will be considerable traffic (stress) on the edges of the interstate as all the traffic is forced through the middle lanes.
2. The stress concentration factor is a way to judge how much internal stress concentration is occurring due to the form factor of the material relative to the actual stress being applied to the object. A stress concentration factor >> 1 tells you that there are internal imperfections that are greatly magnifying the internal stress of the material. A stress concentration factor close to 1 means the material is generally free of internal stress concentrators.
3. To the best of my knowledge, there are holes in the airframe to save weight without sacrificing structural stability.