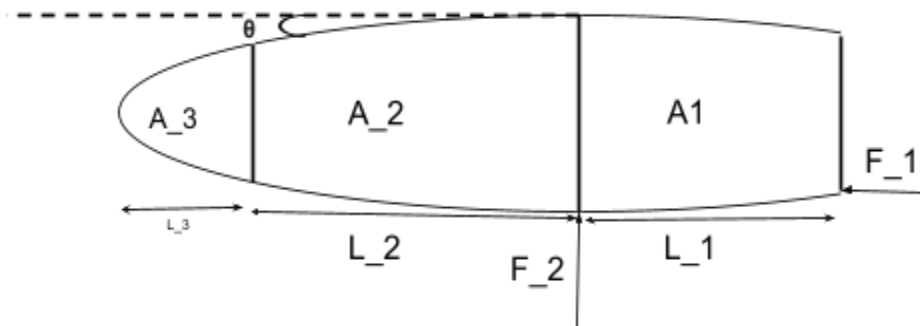


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ASSIGNMENT-2

Roll no. 20D170022

1. Wing Ribs: The wing rib is a lateral structural member of the wing structure. They are frequently of unsymmetrical shape and possess webs that are continuous except for lightness holes and openings for control runs. They have various functions in a wing:
 - a. Maintain the shape of the wing section
 - b. Transmitting external loads to the wing skin
 - c. Reduce the column length of the stringers
 - d. External loads applied in the plane of the rib produce a change in shear force in the wing across the rib; this induces reaction shear flows around its periphery.



2. Yes, it is true because the wing skin forms an impermeable surface for supporting the aerodynamic pressure distribution from which the lifting capability of the wing is derived. These aerodynamic forces are transmitted in turn to the ribs and stringers by the skin through plate and membrane action. Resistance to shear and torsional loads are supplied by shear stress developed in the skin and spar webs, while axial and bending loads are reacted by the combined action of skin and stringers.
3. As explained in the above question, the shear stress due to torsion and transverse forces in the wing are supported using the skin and spar webs
4. Longerons: A large proportion of an aircraft's structure comprises thin webs stiffened by slender longerons or stringers. Both are susceptible to failure by buckling at buckling stress or critical stress, which is frequently below the limit of proportionality and seldom appreciably above the yield stress of the material. Clearly, for this type of structure,

buckling is the most critical mode of failure so the prediction of buckling loads of columns, thin plates and stiffened panels is extremely important in aircraft design

Bulkheads: The basic fuselage structure is essentially a single cell thin-walled tube comprising skin, transverse frames and stringers; transverse frames which extend completely across the fuselage are known as bulkheads

5. It can be increased by using a material having high modulus of elasticity, and by increasing the moment of inertia of the system.