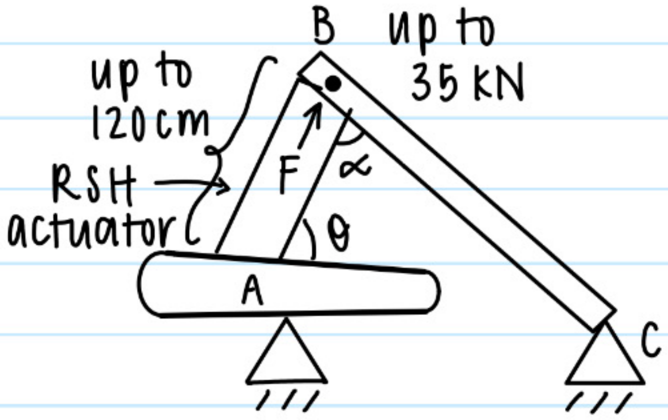
Portfolio sketch:



L = length of arm ;
H = vertical height → $H = L\sin\theta$
W = load applied at B
F = actuator force ; $F \leq 35$ kN
S = stroke length: $S \leq 120\text{ cm} = 1.2\text{ m}$
Goal: maximize H & W

$$\sum M_A = 0 \Rightarrow F \cdot L\sin\theta = W \cdot L$$

$$F\sin\theta = W \rightarrow F = \frac{W}{\sin\theta} \rightarrow W \leq 35\sin\theta$$

$$\ell^2 = L^2 + h^2 - 2Lh\cos\theta \quad , \quad H = L\sin\theta$$

$$S = \sqrt{L^2+h^2-2Lh\cos\theta_{min}} - \sqrt{L^2+h^2-2Lh\cos\theta_{max}}$$

$$S = \ell_{max} - \ell_{min} \leq 1.2\text{ m}$$

According to my code, a max. height of 1.2 m could be reached at 89.97° & a max weight of 5 kN reached at 95.08°. To optimize both, I found the average of these two angles, 92.525°, & found that it produced a height of 1.199 m & weight of 4.87 kN. Since stroke length depends on both the min. & max. actuator length, I assumed a min. angle of 20° since 0° (perfectly horizontal) is unrealistic. At $\theta = 92.525°$, the stroke length is 1.166 m, which fits within the 1.2 m limit.