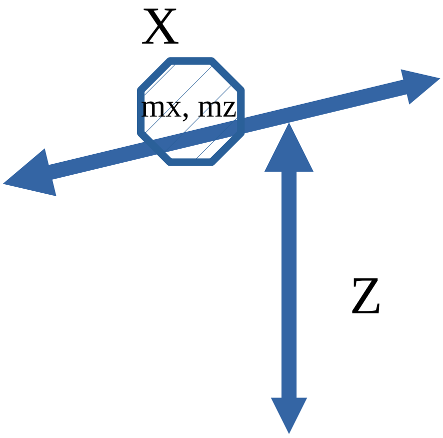
ARP 2022-2023 - FIRST ASSIGNMENT - general specs.

part 1/2

The code to design, develop, test and deploy is an interactive simulator of hoist with 2 d.o.f, in which two different consoles allow the user to activate the hoist.

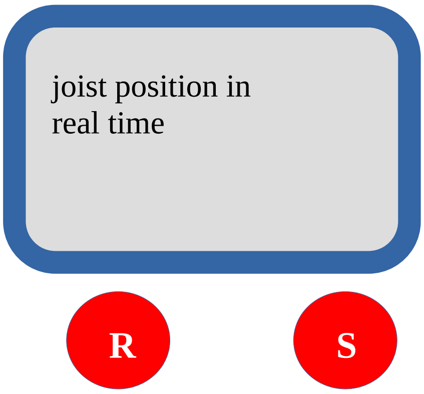


In the octagonal box there are two motors mx and mz, which displace the hoist along the two respective axes. Motions along axes have their bounds, say ***0 - max_x*** and ***0 - max_z.***

From the user side there are two consoles (shell windows) and keys with different aims, that simulate a real system.

command console

inspection console



Buttons:
X axis increase
X axis decrease
X axis stop
Z axis increase
Z axis decrease
Z axis stop

commands specify a constant speed motion

S: emergency stop, the joist stops immediately until a command from the first console arrives

R: reset, the joint stops, both axes go to a zero position and wait for commands.

The simulator requires (at least) the following 5 processes:

command console, reading the 6 commands, using keyboard keys

inspection console, receiving from motors the hoist positions while moving, and reporting on the screen somehow (free choice); the inspection console manages the S ad R buttons as well (simulated in a free way using the keyboard)

motor x, simulating the motion along x axis, receiving command and sending back the real time position including simulated errors

motor z, similar to motor x

watchdog: it checks the previous 4 processes periodically, and sends a reset (like the R button) in case all processes *did nothing* (no computation, no motion, no input/output) for a certain time, say, 60 seconds.