```
%%
% The following functions were saved as live functions(.mlx) -
% 1) mysteel_stress
% 2) strip_area
% 3) unfactored_steel_stress
% The code for which is given below:
%%
% Function: mysteel_stress - The following function is used to
% calculate steel stress taking strain as input.
function stress = mysteel_stress(strain)
        e = abs(strain);
        if(e <=0.00174)
            stress = strain*(2*10^5);
        elseif(e > 0.00174 && e<=0.00195)
            stress = (strain/e)*(103809.5238*(e-0.00174) + 347.8);
        elseif(e > 0.00195 && e<=0.00226)
            stress = (strain/e)*(70000*(e-0.00195) + 369.6);
        elseif(e > 0.00226 && e <= 0.00277)
            stress = (strain/e)*(42549.01961*(e-0.00226) + 391.3);
        elseif(e > 0.00277 && e <= 0.00312)
            stress = (strain/e)*(31142.85714*(e-0.00277) + 413);
        elseif(e > 0.00312 && e < 0.00417)
            stress = (strain/e)*(10380.95238*(e-0.00312) + 423.9);
        else
            stress = 0.87*500*(strain/e);
        end
end
%%
% Function: strip_area - It takes n and t  which is the strip number and strip thickness as input and
% returns the strip area
function a = strip_area(n,t)
z = (2*n-1)*(t/2);
b1 = 2*sqrt(1050^2-(1050-z)^2);
a = (n-1)*t;
b = n*t;
if(z == 1050)
    a = 600*t;
    % to check if strip lies in hollow region
elseif(a>300 && b<1800)
    b2 = 2*sqrt(750^2 - (1050-z)^2);
    a = (b1-b2)*t;
    % to check if strip is completely outside the hollow region
elseif(b<300||a>1800)
    a = b1*t;
    % finally the last condition is for strip partly lying in hollow region
else
    if(b>300 && b<1800)
        z = (b+300)/2;
        b2 = 2*sqrt(750^2-(1050-z)^2);
        a = b1*t - b2*(b-300);
    elseif(a>300 && a<1800)
        z = (1800+a)/2;
```

```
        b2 = 2*sqrt(750^2-(1050-z)^2);
        a = b1*t - b2*(1800-a);
    end
end
end
%%
% Function: unfactored_steel_stress - The following function is used to
% calculate unfactored steel stress
% The function takes strain as input and returns corresponding stress
function stress = unfactored_steel_stress(strain)
        e = abs(strain);
        if(e <=0.002)
            stress = strain*(2*10^5);
        elseif(e > 0.002 && e<=0.00222)
            stress = (strain/e)*(113636.3636*(e-0.002) + 400);
        elseif(e > 0.00222 && e<=0.00253)
            stress = (strain/e)*(80645.16129*(e-0.00222) + 425);
        elseif(e > 0.00253 && e <= 0.00305)
            stress = (strain/e)*(46153.84615*(e-0.00253) + 450);
        elseif(e > 0.00305 && e <= 0.00342)
            stress = (strain/e)*(35135.13514*(e-0.00305) + 474);
        elseif(e > 0.00342 && e < 0.0045)
            stress = (strain/e)*(12037.03704*(e-0.00342) + 487);
        else
            stress = 500*(strain/e);
        end
end
```