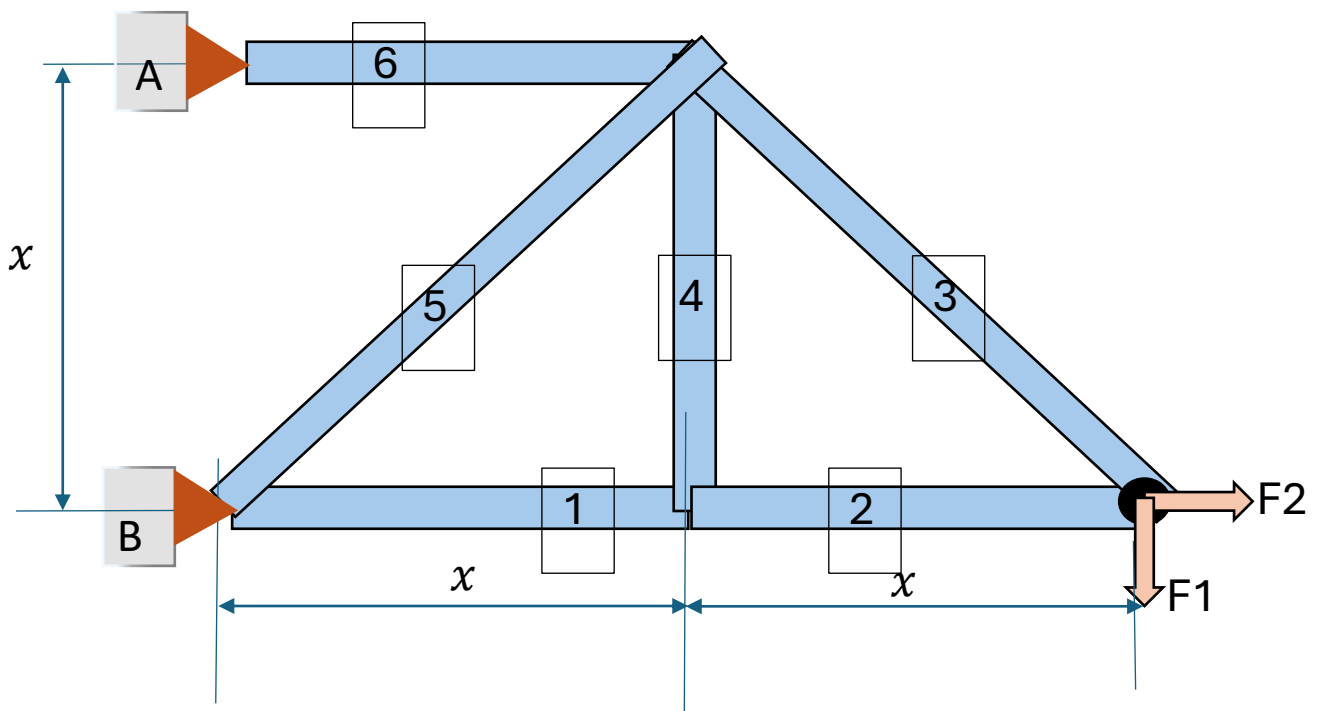


ENGR6011: Assessment 1

Develop computer programs in MATLAB environment to solve the following problems.

Questions 1 and 2 carry equal weightage. The value of ID required to obtain your solution shall be derived from the table after question 2. This value is unique for each student. Assume any missing information required to solve the problems and report the same.

- (1) Determine the support reactions and forces in all members of the truss shown below. Assume all members have a cross-sectional area of 0.0015 m^2 and Elastic Constant of 200 GPa . Assume all joints to be pinned. This problem is adapted from Problem 14.8 in Section 14; Hibbeler, R. C., & Tan, K.-H. (2012). Structural analysis (8th ed. in SI Units. ed.). Singapore: Pearson Education.

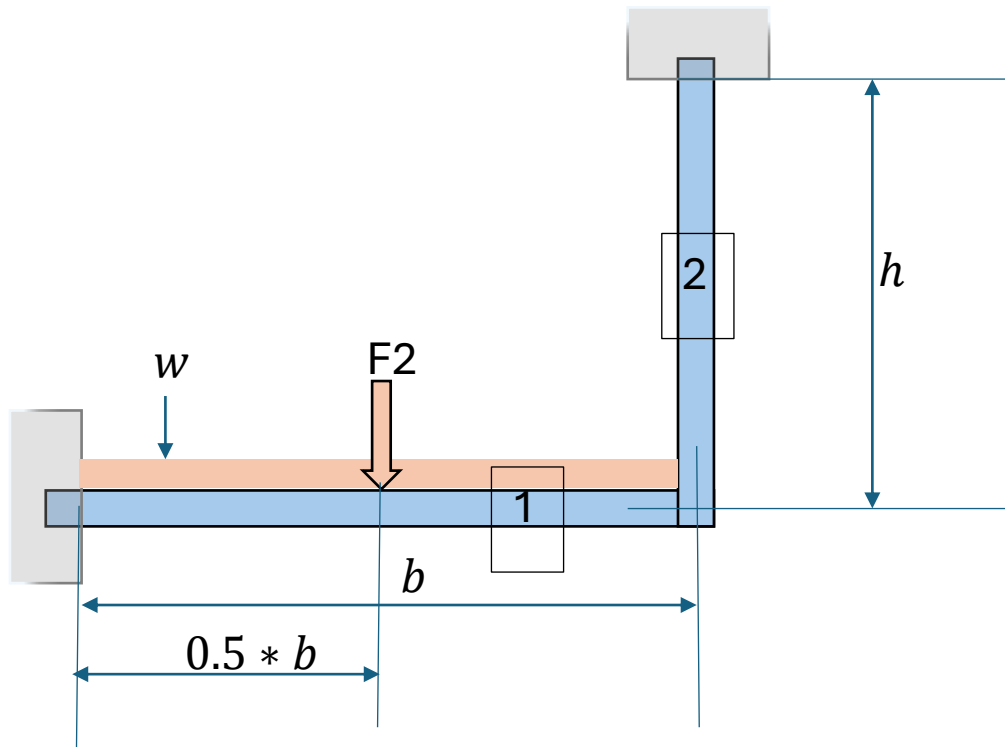


$$F1 = 15 + (0.2 * ID) \text{ kN}$$

$$F2 = 10 - (0.02 * ID) \text{ kN}$$

$$x = 5 - (0.02 * ID) \text{ m}$$

- (2) Determine the Shear Force and Bending Moments in each member of the framed structure shown below. Use stiffness method for the computation. Take $I = 450 \times 10^3 \text{ mm}^4$, $A = 0.012 \text{ m}^2$ and $E = 200 \text{ GPa}$ for each member respectively. This problem is adapted from Problem 16.2, Chapter 16; Hibbeler, R. C., & Tan, K.-H. (2012). Structural analysis (8th ed. in SI Units. ed.). Singapore: Pearson Education.



$$w = 30 + 0.1 * ID \text{ kN/m}$$

$$F2 = 50 - 0.1 * ID \text{ kN}$$

$$h = 5 - (0.02 * ID) \text{ m}$$

$$b = 3 + (0.01 * ID) \text{ m}$$

Please use the table below to locate your ID to solve the problems:

Last Name	First Name	Student number	ID
Abu	Mark Kervin	21396612	1
Acevedo Osma	Juan	22056713	2
Adhikari	Kamal	21925029	3
Ahmed	Uzair	21619652	4
Akula	Shailaja	21252578	5
Bajgain	Alina	21954324	6
Balachandar Jessy Esther Rani	Hirthick naveen	21952878	7
Bana	Preet	21303421	8
Barua	Nirvik	21384730	9
Barua	Tonmoy	21927850	10
Basnet	Dipesh	22005744	11
Bhandari	Sastika	21642153	12
Bhandari	Ujjwol	21979440	13
Bhusal	Madan	21594869	14
Bidha	Phub	21704600	15
Chakubaji	Rubal	21891667	16
Chandra Sekaran	Varun Kumar	21277474	17
Cheng	Chen	21771811	18
Chhetri	Dinesh	21675612	19
Choden	Pema	21963294	20
Dagar	Naveen Kumar	21716595	21
Dassanayake	Thasara Samod	21667949	22
Davaasambuu	Hishko	21312595	23
Deki	Sonam	21768800	24
Dema	Dechen	21991622	25
Dema	Kinley	21736276	26
Dema	Sangay	21532636	27
Dembereldodov	Odno	21434680	28
Dendup	Sonam	21654527	29
Dhar	Jyotirmoy	21405204	30
Ding	Luyao	21717022	31
Dinglasan	Lojilyn	21347830	32
Dorji	Dechen	21762763	33
Dorji	Jampel	21829309	34
Dorji	Lobzang	21652783	35
Dorji	Rinchen	21673726	36
Dorji	Rinzin	21630941	37
Dorji	Tashi	21770164	38
Doya	Passang	21545184	39
Du	Ruishi	21950034	40
Duldulao	Kathleen Faith	21461798	41
Erdenebat	Zola	21791660	42

Estupinan Chaw	Guillermo	21451375	43
Galicia	Joshua Benjamin	21418477	44
Ghalley	Denesh	21969438	45
Gill	Jugraj Singh	21247147	46
Giri	Anish	22018098	47
Golgoon	Delaram	22184012	48
Golushkova	Larisa	21216024	49
Granado	Jesshell	21809592	50
Gurung	Parmila	21587966	51
Gyeltshen	Kencho	22053086	52
Gyeltshen	Thinley	21667198	53
Haque	Onisha	22256746	54
Hasan	S M Minhazul	21949663	55
Hassan	Ibrahim Ali Ibrahim Ali	21906480	56
Hirani	Jinesh	20928797	57
Jadhav	Bhargav Manoj	21864436	58
Jahir	Foige Mohammed	21360879	59
Jayawardana Arachchige	Sanjeewa Sampath Jayawardana	21116603	60
Jha	Chandani	21407996	61
Joy	Alfine	21908839	62
Justin	Abil	21644256	63
K C	Sujata	21758924	64
Kafle	Avash	21436327	65
Kafle	Dinesh	22051598	66
Karki	Purushottam	21840575	67
Kathiravan	Bhaarath	20928962	68
Kathiriya	Yash	21839188	69
Kaung Htet Naing	Kaung Htet Naing	21206766	70
Khadka	Amrit	21758940	71
Khadka	Sailesh	21721489	72
Khadka	Ujjal	21785171	73
Khan	Koural	21556173	74
Khatiwada	Yogesh	21395020	75
Kheni	Jemish Hiteshbhai	21733992	76
Komalan	Sambhu	21428984	77
Kuria	Elsa Wanjiru	21976027	78
Lhamo	Chimi	21658367	79
Liu	Sam	21817922	80
Liu	Sitong	22000875	81
Maerz Laurent	Juan Nicolas	21522721	82
Maharjan	Shailendra	21757167	83
Mansuri	Sabi	21880063	84
Mathew	Kevin	21868823	85
Mayad	Inshad Ul	21962822	86
Mehta	Sarvang Jayeshkumar	21893469	87

Neelam	Rohith	21895193	88
Ng	Gerald Zhan Bo	18770993	89
Niroula	Pradip	21674091	90
Norbu	Tenzin Choki	21915033	91
Norbu	Tshewang	21604603	92
Panthee	Kapil	21861233	93
Patel	Manishkumar Kanubhai	21957501	94
Phuntsho	Royal	21420605	95
Poovaliparambil Shahulhameed	Salih	21759367	96
Potluri	Bhavana	21988213	97
Rai	Heman	21741021	98
Rai	Subash	21661365	99
Rajeev	Rachita	21690644	100
Ranjitkar	Upama	21677689	101
Raval	Bhumin Vipulkumar	21834594	102
Regis	Reyland	21720062	103
Ren	Zhaoyang	21673865	104
Rifat	S M Abul Fatha	21446012	105
Sah	Dharmendra	21651007	106
Saju	Eldho	21568327	107
Samdrup	Tashi	21918595	108
Sane	Nihar	21667499	109
Selden	Pema	21724394	110
Shah	Darsh	21325467	111
Shah	Pankaj	21590236	112
Shahi	Sushmita	21710872	113
Shaji	Anjusha	21435256	114
Sharma	Siddhant	20667061	115
Singh Dangol	Bijan	21728312	116
Tamang	Nim Dorji	21840261	117
Tao	Mike	21916463	118
Tashi	Tshering	21658529	119
Tenzin	Jurme	21587209	120
Thapa	Sarad	21978696	121
Thapa	Viki	21534441	122
Thelwadana Mudiyansele	Kaveesha Chiraptha Bandara Wijeratne	21684948	123
Toyoshima Hirata	Marcelo	21383986	124
Tshering	Pemba	21603781	125
Vikas	Vikas	21867105	126
Wainaina	Samuel	21660621	127
Wang	Shuoyan	21893207	128
Wangchuk	Sonam	21405097	129
Wangchuk	Ugyen	21621262	130

Wangda	Dorji	21627231	131
Wangdi	Kezang	21645152	132
Wangdi	Sangay	22051996	133
Xiao	Huiqiong	21905694	134
Yangzom	Sonam	21658477	135
Yao	Yao	21991567	136
Yoesel	Jigthril	21668641	137
Yoezer	Jigyel	21639210	138
Younten	Kuenzang	22021229	139
Youzer	Pema	21330678	140
Yu	Zhenxiao	22013349	141
Zhang	Dingren	21989892	142