Istanbul Technical University
Department of Geomatics Engineering

FUNDAMENTAL OF PROGRAMMING

TERM PROJECT

CRN 20821

DATE: 19.04.2022

DUE: 27.05.2022

BRIEFING

- The assignment contains two main parts. Each of these requires an understanding of basic surveying problems.

- The necessary theoretical background of each part is given throughout this document.

Part-I: Open Traverse Computation

Part-II: Electronic Tacheometry Computation

CONTENTS

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PLEASE NOTE THAT

- The term project should be submitted as a compressed file (*.zip or *.rar) which contains python script written in python (*.py) file(/s). Any other format uploaded to the NINOVA system (such as *.doc, *.docx, *.png, *.jpg) will be graded as 0(zero).

- The script files must be named as "StudentID.py" (for example, "01010000.py"). In case there are more than one questions, python script name must include question number (for example, "01010000_1.py", "01010000_2.py").

- All python script file(/s) must be compressed as "StudentID.zip" (for example, "01010000.zip" or "01010000.rar".)

- This homework is an individual work that means you should not work as groups. Any copied code or similarities as examples of plagiarism will cause your homework graded as 0 (zero).

- You can USE any code examples given in the presentations or uploaded by yourself during the laboratory hours in your homework freely, however you SHOULD cite these quotation parts clearly in your code with the code example number, week number, and/or slide numbers in the presentations.

- In the homework you should add "_" and the four three digits of your student ID to

all variable names. For example, if your student ID is 015163628 then a program like

```
a = int (input("Enter a number: "))
b = int (input("Enter a second number: "))
print ('The sum of ', a, ' and ', a, ' is ', a+b )
should be written like
a_3628 = int (input("Enter a number: "))
b_3628 = int (input("Enter a second number: "))
print ('The sum of ', a_3628, ' and ', b_3628, ' is ', a_3628+b_3628 )
```

Otherwise your program will be graded as 0 and if the variable names are of someone else's then course grade will be graded as (VF).

- For Electronic Tacheometry Calculations, the height of station point 102 is 110.000 meter for all students.

PART-I: OPEN TRAVERSE COMPUTATION

PROBLEM DEFINITION:

- Write a program to calculate coordinates of stations that are established as an open traverse.

- The input values (known coordinates, traverse angles, length of traverse sides, traverse point IDs) for the program should be entered by the user manually.

- The results of the calculations should be printed to the screen using proper notation as given in the examples.

- Every component of the calculation should be clearly explained to the user before and after the calculation.

THEORY:

Open Traverse (see Fig.1) does not create a closed shape and begins at a point of known position and ends at a point of unknown position. In computational check, it is not possible to detect errors or blunders in distance and directions.

To calculate the coordinates for each point on a traverse, the direction and distance from a known point must also be known.

Once azimuth values and the distances of traverse sides are known, the latitude (ΔX) and departure (ΔY) can be calculated.

The coordinates of the unknown point can then be determined by algebraically adding the latitude to the northing of the known point and the departure to the easting of the known point (see Table. 1).
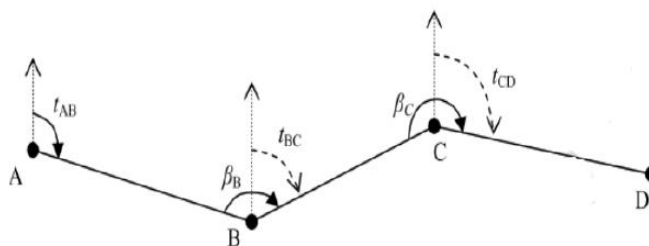

Figure 1: Open traverse

EXAMPLE: Calculate the coordinates of unknown points 1, 2 and 3 using the coordinates of known points A and B, and related direction and distance measurements in the open traverse given below.

Point ID	Coordinates (m)	
	Y	X
A	8450.00	9300.00
B	8575.00	9125.75

$\beta_B = 98^g.3570$ $S_{B1} = 175.58$ m
$\beta_1 = 255^g.6520$ $S_{12} = 168.75$ m
$\beta_2 = 207^g.8930$ $S_{23} = 184.94$ m
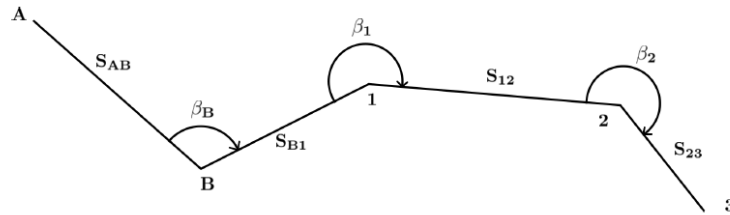
Solution: Calculate the azimuth between points A and B:

$$t_{A,B} = \arctan\left|\frac{\Delta Y}{\Delta X}\right| = \arctan\left|\frac{Y_B - Y_A}{X_B - X_A}\right| = \arctan\left|\frac{125.00}{-174.75}\right| = 39^g.5290 \tag{1}$$

Considering that $\Delta Y > 0$ and $\Delta X < 0$ the azimuth angle is supposed to be in the second quarter,

$$t_{A,B} = 200^g - 39^g.5290 = 160^g.4710$$

Now, it is possible to find the other azimuth angles in the open traverse serie. Starting with $t_{B,1}$,

$$K = t_{A,B} + \beta_B \tag{2}$$

$$\begin{bmatrix} \text{If} & K < 200^g \rightarrow t_{B,1} = K + 200^g \\ \text{If} & 200^g < K < 600^g \rightarrow t_{B,1} = K - 200^g \\ \text{If} & K > 600^g \rightarrow t_{B,1} = K - 600^g \end{bmatrix} \text{Conditions of next azimuth angle} \tag{3}$$

Thus,

$$K = t_{A,B} + \beta_B$$
$$= 160^g.4710 + 98^g.3570$$
$$= 258^g.8280 \quad (K > 200^g)$$
$$t_{B,1} = 258^g.8280 - 200^g$$
$$= 58^g.8280$$

After all azimuth angles are computed, ΔX and ΔY between points can be calculated as,

$$\Delta X_{n,n+1} = S_{n,n+1} \times \cos(t_{n,n+1}) \tag{4} \qquad\qquad \Delta Y_{n,n+1} = S_{n,n+1} \times \sin(t_{n,n+1}) \tag{5}$$

$$\Delta X_{B1} = S_{B1} \times \cos(t_{B,1}) \qquad\qquad\qquad \Delta Y_{B1} = S_{B1} \times \sin(t_{B,1})$$
$$= 175.58 \times \cos(58^g.8280) \qquad\qquad = 175.58 \times \sin(58^g.8280)$$
$$= 105.80 \text{ m} \qquad\qquad\qquad\qquad = 140.12 \text{ m}$$

Finally, the coordinates of unknown points are computed by simply adding ΔX and ΔY values to known coordinates sequentially,

$$X_{n+1} = X_n + \Delta X_{n,n+1} \tag{6} \qquad\qquad Y_{n+1} = Y_n + \Delta Y_{n,n+1} \tag{7}$$

$$X_1 = X_B + \Delta X_{B1} \qquad\qquad\qquad\qquad Y_1 = Y_B + \Delta Y_{B1}$$
$$= 9125.75 + 105.80 \qquad\qquad\qquad = 8575.00 + 140.12$$
$$= 9231.55 \text{ m} \qquad\qquad\qquad\qquad = 8715.12 \text{ m}$$

Table 1: Open traverse computation table

Point ID	Traverse angle (g)	Azimuth (g)	Distance (m)	Δ Y (m)	Δ X (m)	Coordinates (m)	
						Y	X
A						8450.00	9300.50
		160.4710					
B	98.3570					8575.00	9125.75
		58.8280	175.58	140.12	105.80		
1	255.6520					8715.12	9231.55
		114.4800	168.75	164.40	-38.05		
2	207.8930					8879.52	9193.50
		122.3730	184.94	173.64	-63.66		
3						9053.16	9129.84
Σ				478.16	4.09		

PART-II: ELECTRONIC TACHEOMETRY COMPUTATION

PROBLEM DEFINITION:

- Write a program to calculate an electronic tacheometry computation.

- The input values (coordinates and heights of station point and coordinates of target traverse points, measured horizontal and vertical angles for detail points, instrument and reflector heights, point IDs) for the program should be entered by the user manually.

- The results of the calculations should be printed to the screen using proper notation as given in the examples.

- Every component of the calculation should be clearly explained to the user before and after the calculation.

THEORY:

Tacheometry is a method that is used to determine the location of topographic details. This method determines the polar coordinates of detail points via horizontal angle and horizontal distance from stations and their elevation via slope distance and vertical angle. Electronic tacheometric observations can be carried out by using a total station and reflector.

The steps of tacheometry measurement are as follow;

1. The instrument (i.e total station) is set on the station point P102. The height of the instrument (hi) is measured.

2. The horizontal zero direction of the instrument in traverse point P102 (denoted as 0g.0000 in Fig.2) must be fixed to the previous traverse station P101.

3. The reflector (shown in color red in Fig.3) is located on the detail point to be measured. The height of the reflector (hr) is measured.

4. Vertical angle is measured either as zenith or nadir, depending on the instrument. In calculations, the geometric relations are formulated based on the zenith angle (Z).

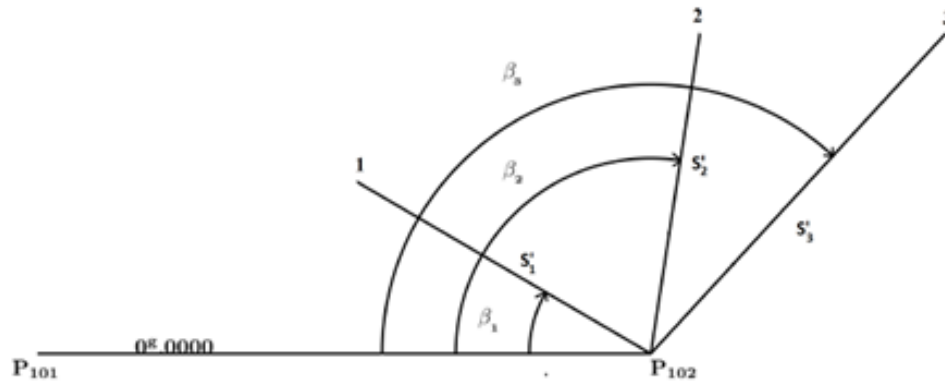5. Finally, the slope distance is measured between traverse point P102 and detail point

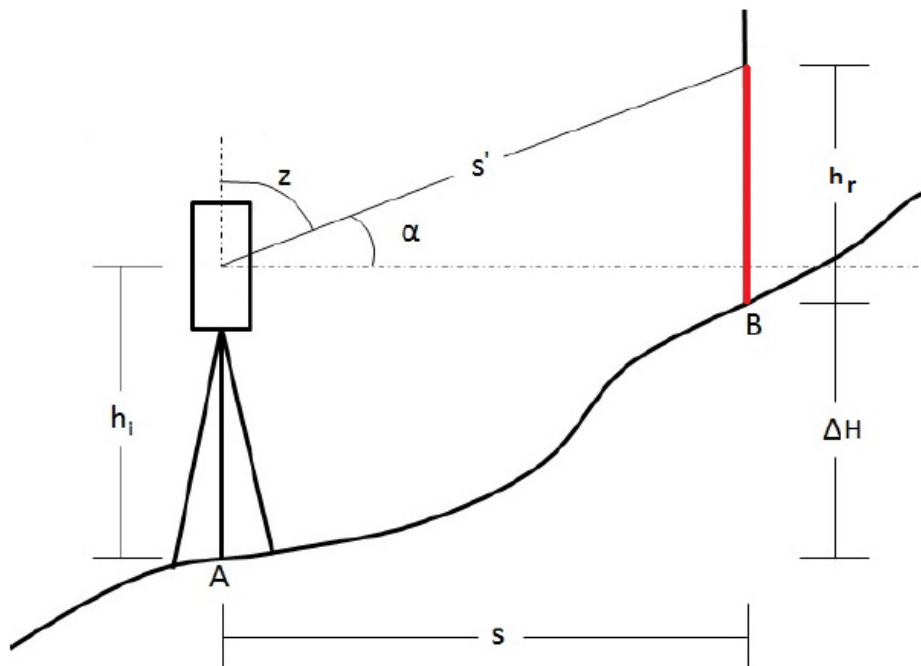**Figure 2** Tacheometry measurement (plan view)

Figure 3 : Trigonometric levelling (section view)

EXAMPLE: A total station has been setup at point P_{102} and referenced to point P_{101} in order to carry out an electronic tacheometry process for a detail survey. By using the coordinates and heights of the point P_{101} and P_{102} and given measurements, calculate the coordinates and height of detail point 1 (The geometry is as given in Fig.3).

Point ID	Coordinates (m)		Height (m)
	Y	X	
P101	3540.650	2360.420	110.600
P102	3740.650	2360.420	125.100

Station ID	Target ID	Horizontal Direction (g)	Vertical Angle (g)	Slope Distance (m)
P102	P101	0.0000		
	1	111.0554	99.8568	82.576
h_i = 1.50 m	2	180.5545	99.1000	96.425
h_r = 2.00 m	3	209.7820	101.1700	103.647

Solution: To find the elevation of detail point, the height difference between the station traverse point and the detail point must be calculated via trigonometric levelling method. In this method, the height difference ΔH (see Fig.4) is calculated as,

$$\Delta H = S' \times \cos(Z) + h_i - h_r \tag{9}$$

So, for the point 1,

$$\Delta H = 82.576 \text{ m} \times \cos(99^g.8568) + 1.50 \text{ m} - 2.00 \text{ m} = -0.314 \text{ m}$$

The elevation of the point H_1 can be found as,

$$H_1 = H_{P102} + \Delta H = 124.786 \text{ m}$$

Horizontal distance between traverse station and detail point can be calculated using slope distance and zenith angle.

$$S = S' \times \sin(Z) \tag{10}$$

For the point 1 the horizontal distance is calculated as,

$$S_{P_{102}-1} = S'_{P_{102}-1} \times \sin(Z_1) = 82.576 \text{ m}$$

To calculate the coordinate of the detail point, one must find the azimuth angle from traverse station to the detail point (i.e $t_{P_{102},1}$). Azimuth can be calculated since their coordinates are already known. To find the azimuth $t_{P_{102},1}$, recall the Equation (2),

$$K = t_{P_{101},P_{102}} + \beta_1$$

$$\begin{bmatrix} \text{If} & K < 200^g \to t_{P_{102},1} = K + 200^g \\ \text{If} & 200^g < K < 600^g \to t_{P_{102},1} = K - 200^g \\ \text{If} & K > 600^g \to t_{P_{102},1} = K - 600^g \end{bmatrix} \text{Conditions of next azimuth angle}$$

Now, we have everything we need to calculate the coordinates of point 1 (horizontal distance S and azimuth angle). Use Equations (4) and (5) to calculate $\Delta X_{P_{102}-1}$ and $\Delta Y_{P_{102}-1}$, and Equations (6) and (7) to calculate the coordinates X_1 and Y_1.

$$\begin{aligned} X_1 &= X_{P_{102}} + S_{P_{102}-1} \times \cos(t_{P_{102},1}) \\ &= 2360.420 + 82.576 \times \cos(11.0554) \\ &= 2441.754 \text{ m} \end{aligned}$$

$$\begin{aligned} Y_1 &= Y_{P_{102}} + S_{P_{102}-1} \times \sin(t_{P_{102},1}) \\ &= 3740.650 + 82.576 \times \sin(11.0554) \\ &= 3754.918 \text{ m} \end{aligned}$$

PART III: PYTHON INPUT/OUTPUT EXAMPLES:

Part I: Open Traverse Calculation:

```
>>>
This program calculates the coordinates in open traverse serie
―――――――――――――――――――――――――――――――――――――――――――――――――――――
Enter the point ID of first known point       : A
Enter the Y coordinates of first known point  (m): 8450.00
Enter the X coordinates of first known point  (m): 9300.50
Enter the point ID of second known point       : B
Enter the Y coordinates of second known point (m): 8575.00
Enter the X coordinates of second known point (m): 9125.75
Enter the number of unknown traverse points    : 3
Enter the point ID of unknown point 1          : 1
Enter the point ID of unknown point 2          : 2
Enter the point ID of unknown point 3          : 3
Enter the traverse angle of B (grad)           : 98.3570
Enter the traverse angle of 1 (grad)           : 255.6520
Enter the traverse angle of 2 (grad)           : 207.8930
Enter the horizontal distance between B and 1 (m): 175.58
Enter the horizontal distance between 1 and 2 (m): 168.75
Enter the horizontal distance between 2 and 3 (m): 184.94
```

```
>>>
Point ID    Point ID    Azimuth    Delta Y    Delta X
―――――――――――――――――――――――――――――――――――――――――――――――――――――
A           B           160.4710
B           1            58.8280    140.12     105.80
1           2           114.4800    164.40     −38.05
2           3           112.3730    173.64     −63.66
―――――――――――――――――――――――――――――――――――――――――――――――――――――
Point ID  Coordinate(Y)   Coordinate(X)
―――――――――――――――――――――――――――――――――――――――――――――――――
1           8715.12          9231.55
2           8879.52          9193.50
3           9053.16          9129.84
―――――――――――――――――――――――――――――――――――――――――――――――――
```

Part II : Electronic Tacheometry Calculation:

ELECTROMETRIC TACHEOMETRY COMPUTATION

```
>>>
Program for Electrometric Tacheometry Computation
-------------------------------------------------
Enter the stationary traverse ID           : P102
Enter the referenced traverse ID           : P101
Enter the Y coordinates of P101 (m)         : 3540.650
Enter the X coordinates of P101 (m)         : 2360.420

Enter the Y coordinates of P102 (m)         : 3740.650
Enter the X coordinates of P102 (m)         : 2360.420
Enter the height of P102        (m)         : 125.100
Enter the point ID of detail point          : 1
Enter the horizontal direction of point 1 (grad): 111.0554
Enter the verticle angle of point 1 (grad)  : 99.8568
Enter the slope distance between P102 and 1 (m) : 82.576
Enter the height of instrument (m)          : 2.00
Enter the height of reflector  (m)          : 1.50
```

```
>>>
PointID  PointID  Hor. Dist.  Delta H  Elevation   Coord.(Y)  Coord.(X)
----------------------------------------------------------------------
P102       1        82.576     -0.314   124.786     3754.918   2441.754
----------------------------------------------------------------------
```

PART IV: INPUT LISTS for STUDENTS

PART I: Open Traverse Calculation

#	Students	Student ID	Point A		Point B		Traverse Angle			Distance Measurement		
			Y (m)	X (m)	Y (m)	X (m)	βB (g)	β1 (g)	β2 (g)	S_{B1} (m)	S_{12} (m)	S_{23} (m)
1	Abdulkadir Aslan	10210552	417713.288	4552622.053	417896.454	4552664.104	215.0212	143.0106	129.0177	381.258	375.290	328.334
2	Abdulkerim Şimşek	10180510	417694.279	4552600.081	417830.457	4552667.098	133.0182	151.0199	92.0095	284.294	329.376	266.367
3	Abdurrahim Gider	10200606	417635.216	4552636.089	417848.432	4552640.075	162.0206	102.0205	151.0176	216.381	277.278	257.202
4	Ahmet Arda Bilgin	10200612	417713.242	4552617.052	417906.465	4552642.073	117.0177	166.0184	138.0101	364.300	247.316	262.246
5	Ahmet Emir Yılmaz	10200518	417666.218	4552645.099	417828.488	4552641.081	147.0095	150.0135	123.0167	388.373	392.219	373.373
6	Alalddın Ibrahım Abbas Owaıs	10210933	417639.266	4552624.059	417817.425	4552661.072	200.0100	216.0195	96.0182	292.348	299.221	272.296
7	Aleyna Bayram	10200521	417693.299	4552620.070	417876.428	4552664.115	209.0165	86.0216	108.0106	356.350	250.325	279.352
8	Aleyna Şaşmaz	10200618	417688.209	4552598.051	417905.479	4552667.091	163.0191	204.0169	112.0134	269.326	378.398	308.275
9	Alper Kaan Özbek	10210659	417714.285	4552605.059	417890.485	4552618.094	215.0103	208.0169	149.0085	263.208	259.222	204.273
10	Amir Alhac	10150912	417680.271	4552602.093	417898.473	4552653.085	82.0109	100.0184	155.0091	340.386	321.243	260.395
11	Ammar Balur	10210563	417712.232	4552625.100	417851.484	4552630.081	206.0096	170.0085	146.0193	228.346	381.215	252.314
12	Aşkınnur Türedi	10200608	417679.235	4552631.079	417838.439	4552619.089	149.0163	198.0205	196.0203	288.360	340.210	374.323
13	Aslı Bal	10200507	417685.297	4552608.073	417888.405	4552632.093	107.0196	185.0123	132.0158	216.248	286.367	280.231
14	Aslı Tuncer	10200514	417675.252	4552598.098	417854.488	4552657.113	118.0093	121.0145	154.0102	299.398	347.375	387.331
15	Ata Eren Özavcı	10200522	417666.223	4552598.098	417908.424	4552640.106	147.0111	135.0186	153.0161	299.250	314.340	377.275
16	Ata Yoldaş Balta	10190572	417674.223	4552602.085	417820.437	4552652.114	122.0183	142.0169	81.0209	314.287	323.342	308.254
17	Ayça Perihan Kılıç	10200626	417642.264	4552641.066	417858.431	4552620.083	125.0123	170.0099	159.0129	349.207	357.317	236.287

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#	Students	Student ID	Point A		Point B		Traverse Angle			Distance Measurement		
			Y (m)	X (m)	Y (m)	X (m)	βB (g)	β1 (g)	β2 (g)	S_{B1} (m)	S_{12} (m)	S_{23} (m)
18	Ayça Songur	10190617	417632.276	4552616.080	417874.419	4552635.117	121.0159	123.0150	118.0183	245.253	369.234	221.247
19	Ayça Yerlikaya	10200603	417628.295	4552608.067	417862.497	4552663.071	180.0175	211.0159	110.0185	397.234	287.329	379.298
20	Ayda Aydın	10200541	417623.213	4552607.070	417817.441	4552658.119	219.0164	157.0130	136.0165	289.238	238.267	325.321
21	Barış Özçimenli	10210616	417675.217	4552613.097	417917.419	4552653.112	171.0135	190.0125	135.0101	322.225	260.390	342.297
22	Başak Çakır	10200516	417628.244	4552630.098	417823.457	4552639.078	145.0142	86.0103	204.0196	228.270	280.366	202.318
23	Başak Şahin	10200616	417640.244	4552629.071	417888.441	4552642.093	150.0167	172.0219	197.0156	333.291	291.380	234.380
24	Batuhan Alkaya	10210608	417662.237	4552633.064	417818.488	4552642.107	88.0111	137.0090	119.0141	380.219	262.296	367.205
25	Batuhan Özdemir	10200547	417638.285	4552638.068	417845.459	4552630.080	85.0112	103.0160	97.0208	315.289	369.294	373.349
26	Batuhan Yakut	10190502	417672.274	4552637.055	417873.419	4552629.083	160.0152	204.0188	144.0153	223.210	223.376	332.243
27	Berk Yetim	10180558	417625.230	4552648.075	417819.407	4552651.114	161.0119	105.0192	205.0112	294.383	340.335	389.229
28	Berkay Korik	10190545	417671.212	4552647.050	417904.451	4552657.097	194.0144	94.0200	157.0102	330.349	331.330	243.360
29	Berkay Özkaşlı	10190538	417636.206	4552602.080	417874.428	4552632.104	217.0149	81.0102	207.0191	396.293	269.235	288.302
30	Berke Kamilcan Vardar	10210712	417641.254	4552626.055	417889.415	4552662.070	140.0152	84.0186	94.0150	290.326	227.263	293.238
31	Beste İrem Şengöz	10200511	417635.232	4552623.100	417817.488	4552635.109	200.0106	166.0133	92.0124	385.258	262.301	321.277
32	Betül Özübek	10200537	417656.283	4552612.085	417845.477	4552662.110	115.0199	168.0151	122.0212	351.216	202.210	378.281
33	Betül Peker	10200565	417654.204	4552632.059	417853.443	4552649.081	107.0114	116.0206	147.0080	332.368	206.294	312.221
34	Beyza Bilge Payal	10210631	417640.300	4552647.051	417900.451	4552662.105	199.0096	155.0204	167.0206	223.260	209.233	336.205
35	Beyza Cihan	10200548	417693.290	4552610.073	417852.472	4552637.114	208.0179	87.0160	197.0144	237.333	216.300	222.322
36	Beyza Korkmaz	10200654	417690.229	4552624.074	417893.406	4552645.074	157.0182	143.0123	97.0199	325.332	285.293	352.247
37	Beyza Nur Karadana	10180540	417710.222	4552599.066	417906.486	4552659.119	142.0087	129.0149	119.0159	273.293	342.354	222.218
38	Beyzanur Aybek	10200656	417620.249	4552607.054	417825.436	4552631.112	133.0092	99.0121	200.0155	219.365	322.329	216.386
39	Can Mıchael Hucko	10210632	417628.252	4552634.056	417825.449	4552639.108	194.0177	199.0132	148.0177	291.217	212.287	360.388
40	Ceyda Okur	10200508	417690.242	4552598.100	417825.466	4552660.091	90.0163	107.0148	106.0136	371.251	276.352	302.313
41	Ceyda Sağlam	10200555	417663.203	4552637.051	417832.474	4552666.089	104.0157	88.0208	154.0176	239.293	274.277	257.279
42	Ceyda Tabak	10200657	417656.235	4552637.070	417837.499	4552619.094	124.0218	196.0161	125.0091	390.319	353.261	240.244
43	Damla Su Beytekin	10210549	417634.239	4552615.079	417915.438	4552643.091	155.0080	101.0181	115.0115	299.320	294.287	394.210

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#	Students	Student ID	Point A		Point B		Traverse Angle			Distance Measurement		
			Y (m)	X (m)	Y (m)	X (m)	βB (g)	β1 (g)	β2 (g)	S_{B1} (m)	S_{12} (m)	S_{23} (m)
44	Deniz Çelen	10150628	417660.223	4552639.065	417840.471	4552632.119	191.0106	88.0150	219.0105	262.227	370.240	336.245
45	Deniz Yavuz	10200634	417694.214	4552612.063	417854.467	4552626.079	99.0144	152.0083	124.0213	272.217	206.321	260.242
46	Dilara Başer	10200629	417677.209	4552614.064	417907.444	4552633.098	202.0120	92.0160	162.0160	209.290	261.253	267.264
47	Doğan Keleş	10140521	417617.257	4552635.062	417877.480	4552624.082	214.0196	165.0209	206.0154	298.203	376.336	353.342
48	Doğancan Doğan	10200523	417660.237	4552610.054	417827.464	4552649.088	216.0207	182.0113	162.0132	240.313	372.273	344.208
49	Ebrar Gökçe Akman	10210562	417647.237	4552644.091	417891.443	4552644.102	149.0093	119.0155	126.0207	375.223	232.333	213.292
50	Ece Karaman	10200623	417625.269	4552601.075	417858.493	4552640.075	115.0114	82.0200	107.0207	351.346	346.398	222.324
51	Ece Nihan Doğudan	10200653	417671.243	4552617.087	417906.422	4552637.072	196.0152	108.0214	179.0098	335.200	207.232	386.365
52	Ecrin Kuyu	10200534	417658.288	4552624.088	417858.422	4552651.084	83.0131	134.0159	210.0180	355.277	219.362	385.296
53	Efe Güder	10200563	417669.250	4552625.091	417905.432	4552620.071	144.0126	216.0146	100.0109	255.335	399.392	284.295
54	Elif Kızılırmak	10200553	417656.232	4552600.096	417880.412	4552652.115	197.0084	82.0189	187.0176	290.282	247.377	288.244
55	Elif Nur Kayhan	10200647	417664.231	4552634.084	417893.432	4552654.104	215.0108	86.0116	94.0196	317.254	212.316	323.355
56	Elif Sude Çetinel	10200560	417662.221	4552644.065	417912.413	4552644.077	192.0146	157.0212	126.0096	310.360	211.268	245.217
57	Emir Albayrak	10210541	417659.245	4552644.062	417896.466	4552647.115	120.0092	94.0123	194.0112	277.240	242.285	233.356
58	Emircan Korkmaz	10200566	417705.287	4552632.063	417823.411	4552623.120	122.0201	187.0141	111.0110	222.351	302.338	280.302
59	Emirhan Baran	10210548	417714.256	4552622.054	417845.415	4552621.101	189.0115	129.0122	147.0181	331.316	331.335	355.203
60	Emirhan Göksu	10200558	417617.212	4552642.078	417901.456	4552637.119	121.0110	144.0214	147.0191	383.203	202.279	263.264
61	Emre Aktaş	10200642	417690.269	4552622.068	417821.495	4552664.083	139.0125	209.0117	121.0195	382.397	297.260	247.342
62	Emre Candabakoğlu	10210601	417671.244	4552636.088	417840.449	4552659.097	83.0180	160.0170	140.0095	223.354	374.380	377.213
63	Ender Baran Toprak	10200650	417717.236	4552609.065	417866.479	4552633.106	162.0120	178.0212	200.0208	397.204	355.282	278.300
64	Enes Batuhan Koç	10200528	417659.264	4552644.088	417893.479	4552665.074	119.0137	146.0189	156.0126	331.260	322.248	325.227
65	Engin Yaman	10200517	417708.289	4552620.052	417845.463	4552621.118	218.0090	194.0154	103.0111	360.295	354.340	289.248
66	Eren Oral	10200639	417625.265	4552610.080	417895.481	4552623.082	208.0179	165.0153	80.0186	223.282	337.329	303.361
67	Etem Tincan	10190651	417663.237	4552639.063	417819.428	4552658.095	162.0187	107.0155	151.0207	357.215	372.278	292.335
68	Eylül Bavuş	10200648	417636.286	4552598.089	417821.407	4552629.102	146.0174	202.0093	99.0157	215.204	230.337	245.338
69	Eylül Nur Kayabaşı	10200515	417657.234	4552633.088	417856.408	4552629.109	148.0136	176.0082	213.0091	327.280	265.211	332.329

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			Y (m)	X (m)	Y (m)	X (m)	βB (g)	β1 (g)	β2 (g)	S_{B1} (m)	S_{12} (m)	S_{23} (m)
70	Ezgi Çingigiray	10190649	417705.228	4552612.092	417877.410	4552648.116	89.0081	176.0092	217.0133	217.255	260.318	226.274
71	Fatih Tunç	10200571	417709.219	4552646.073	417884.471	4552651.072	99.0216	102.0112	134.0175	338.342	284.297	293.399
72	Feyza Sunker	10210553	417664.292	4552624.084	417898.411	4552618.102	164.0114	213.0113	169.0105	288.296	215.375	221.242
73	Feyza Yurdakul	10200569	417709.230	4552643.054	417897.474	4552622.117	199.0127	195.0105	172.0156	278.396	376.297	293.231
74	Feyzi Ege Danacıoğlu	10190643	417717.296	4552602.061	417853.447	4552646.093	175.0129	156.0190	87.0116	366.201	257.358	281.265
75	Furkan Vatansever	10200536	417667.228	4552628.067	417901.473	4552634.105	124.0210	89.0088	135.0117	248.283	310.294	299.276
76	Gafur Semi Şengül	10180661	417639.227	4552642.092	417898.458	4552645.106	129.0148	155.0167	158.0101	214.400	236.235	249.396
77	Gizem Aytaç	10200636	417624.267	4552630.080	417865.490	4552666.086	214.0213	156.0124	113.0126	341.218	250.259	247.249
78	Gökdeniz Kılıç	10200568	417693.211	4552634.067	417831.461	4552619.114	171.0131	211.0090	186.0140	274.383	386.327	213.319
79	Gökhan Demir	10200552	417672.238	4552627.086	417855.484	4552635.089	193.0182	124.0207	123.0163	200.373	291.355	354.369
80	Gülsüm Yıldız	10200605	417649.275	4552612.078	417830.495	4552667.100	184.0196	180.0090	106.0087	202.268	218.256	392.264
81	Habib Kapan	10190811	417715.259	4552635.098	417865.495	4552648.070	118.0205	171.0125	124.0139	328.372	291.204	259.386
82	Halil Cem Haklı	10200525	417625.217	4552642.051	417887.456	4552651.111	135.0174	130.0170	181.0137	387.290	314.329	380.334
83	Halime Beyza Baykal	10190610	417712.224	4552601.088	417891.499	4552668.094	112.0093	135.0166	108.0179	289.282	276.308	359.231
84	Harun Ünsün	10200812	417681.235	4552642.056	417828.457	4552667.090	210.0160	204.0157	82.0089	231.336	392.245	321.381
85	Hatice Derya Abalı	10200549	417672.224	4552603.078	417905.454	4552648.072	122.0170	180.0220	132.0193	233.306	398.339	372.379
86	Hatice Kübra Öter	10200503	417707.296	4552602.060	417881.455	4552646.110	210.0098	99.0188	95.0209	386.290	294.390	327.358
87	Hatice Sınır	10200630	417717.248	4552607.079	417829.495	4552643.097	111.0219	157.0133	140.0149	352.326	250.352	336.304
88	Hatice Türkan Ayaz	10200557	417715.282	4552630.075	417823.402	4552635.113	134.0142	182.0184	134.0153	261.256	355.225	272.384
89	Havva Aybike Yıldırım	10200535	417651.232	4552641.087	417893.438	4552641.094	138.0180	177.0090	180.0152	201.329	294.278	292.386
90	Hilal Balcı	10190573	417651.281	4552631.085	417822.457	4552645.090	194.0179	208.0155	81.0134	316.243	373.286	279.304
91	Hossamaldın Awıs	10210934	417709.207	4552604.072	417831.444	4552643.099	188.0162	147.0215	162.0150	371.303	380.255	359.337
92	İbrahim Korkmaz	10200807	417671.285	4552618.094	417904.443	4552631.116	196.0154	111.0092	163.0082	254.393	369.337	234.337
93	İbrahim Polat	10190540	417630.225	4552608.070	417834.490	4552649.099	155.0211	194.0082	94.0185	346.228	200.214	201.372
94	İlayda Eser	10200625	417670.263	4552643.069	417906.423	4552640.080	165.0097	109.0216	114.0172	265.303	218.348	223.234
95	İlayda Önsay	10200619	417710.238	4552630.059	417819.496	4552644.083	171.0155	132.0212	121.0118	234.391	251.226	248.267

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			Y (m)	X (m)	Y (m)	X (m)	βB (g)	β1 (g)	β2 (g)	S_{B1} (m)	S_{12} (m)	S_{23} (m)
96	Ilgar Doruk Aslan	10200620	417618.237	4552615.065	417873.412	4552626.102	100.0114	123.0129	199.0179	282.259	301.283	266.346
97	İlya Deniz İnanç	10210641	417700.264	4552643.059	417848.452	4552629.078	142.0132	112.0133	90.0205	293.268	329.395	290.291
98	İrem Ağbağ	10210656	417666.230	4552642.053	417855.452	4552668.078	139.0130	201.0126	122.0167	223.376	387.308	246.289
99	İrem İstek	10200512	417684.278	4552619.094	417888.484	4552643.070	216.0159	117.0126	201.0131	210.356	353.329	332.235
100	İrem Nur Özer	10200533	417651.259	4552646.062	417846.487	4552643.108	208.0190	138.0157	129.0142	345.224	339.204	246.332
101	İrem Odabaşı	10200564	417688.255	4552623.066	417916.444	4552642.118	187.0083	100.0102	141.0204	383.286	358.329	280.237
102	İrem Sultan Şen	10210711	417636.234	4552646.099	417892.412	4552648.109	189.0111	163.0083	161.0160	311.268	213.259	392.247
103	İsmail Şafak Erdoğan	10200530	417708.204	4552624.078	417834.410	4552648.118	137.0163	205.0219	96.0090	226.232	282.344	209.363
104	Kaan Şentürk	10210710	417652.204	4552619.087	417842.459	4552664.091	156.0101	191.0120	86.0090	297.397	239.239	333.252
105	Kamil Bahadır Baş	10210612	417672.285	4552630.076	417861.476	4552621.114	130.0185	188.0220	177.0080	375.276	203.373	259.339
106	Kendal Turan	10200627	417634.209	4552631.058	417838.447	4552625.101	178.0116	101.0107	182.0145	373.216	321.323	261.333
107	Kerim İpek	10200505	417630.251	4552614.069	417818.411	4552634.086	92.0188	130.0112	172.0176	393.359	395.337	384.222
108	Kuzey Demirkıran	10200813	417688.271	4552624.056	417898.444	4552639.084	152.0157	117.0113	168.0196	324.362	260.212	288.258
109	Lara Barbaros	10200572	417621.280	4552601.068	417911.435	4552635.089	149.0172	213.0195	136.0113	216.321	347.318	309.272
110	Lizge Aydın	10190567	417702.206	4552605.072	417890.424	4552625.101	154.0220	175.0185	105.0169	374.255	326.274	314.356
111	Lokman Ömer Genç	10190648	417625.287	4552620.052	417844.489	4552644.105	104.0080	106.0135	183.0123	370.305	400.259	289.377
112	Mehmet Bekil	10200652	417653.202	4552644.051	417879.465	4552655.091	93.0165	134.0191	200.0117	370.250	365.240	218.293
113	Mehmet Salih Tüylüoğlu	10210618	417686.211	4552605.053	417834.461	4552634.116	99.0112	142.0099	127.0092	367.212	281.360	200.355
114	Mehmet Yunus Sarıkaya	10200561	417633.276	4552626.098	417916.460	4552662.119	121.0101	202.0135	122.0158	279.296	364.223	237.271
115	Melih Çetin	10200556	417617.227	4552624.064	417904.468	4552639.108	82.0217	177.0201	80.0200	290.397	284.210	313.390
116	Melih Gökçe	10190539	417622.300	4552628.063	417835.441	4552664.119	192.0131	210.0092	128.0153	253.314	252.378	202.281
117	Meliha İpek	10200811	417709.266	4552644.052	417834.423	4552632.086	97.0092	110.0214	95.0179	314.297	259.387	343.267
118	Melisa İnce	10200646	417703.288	4552635.090	417862.499	4552626.072	214.0125	204.0158	217.0210	315.303	234.354	305.243
119	Mert Kalaycı	10200524	417704.253	4552633.088	417850.489	4552663.083	166.0093	109.0086	109.0168	309.284	284.226	399.326
120	Mertcan Çolak	10130507	417679.250	4552617.067	417862.429	4552644.100	198.0143	189.0161	128.0085	206.373	366.258	389.246
121	Meryem Özer	10200531	417655.251	4552631.059	417879.496	4552639.086	107.0092	139.0188	105.0177	277.273	212.363	286.354

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122	Mevlüt Can Erbaş	10180512	417715.225	4552608.059	417848.463	4552650.097	129.0112	96.0183	166.0087	337.247	287.203	342.383
123	Muhammet Azam Kotan	10200633	417630.215	4552606.057	417902.426	4552637.112	169.0145	127.0166	108.0218	348.299	237.285	357.389
124	Murat Öz	10210648	417698.260	4552622.068	417863.465	4552649.116	140.0176	149.0213	125.0151	323.259	312.310	344.243
125	Mustafa Uğur	10190639	417654.210	4552615.061	417874.420	4552664.091	192.0182	113.0125	194.0089	249.316	210.356	311.374
126	Mustafa Umut Özdemir	10200543	417617.288	4552602.072	417820.419	4552623.114	203.0091	154.0118	140.0192	214.277	392.318	324.246
127	Nazlı Kuvvetli	10200611	417627.278	4552624.100	417863.482	4552623.083	207.0186	145.0148	80.0179	281.389	276.209	252.299
128	Necati Yıldız	10210708	417710.223	4552626.080	417908.486	4552645.108	130.0098	173.0121	146.0144	285.315	390.306	242.352
129	Nergiz Şahin	10180527	417673.266	4552600.078	417859.466	4552661.098	102.0133	158.0158	178.0135	248.391	227.259	329.259
130	Neslihan Özer	10200539	417685.252	4552646.095	417904.411	4552646.090	180.0191	111.0201	153.0113	270.343	266.355	203.287
131	Nihal Yüksel	10200658	417661.228	4552602.075	417887.450	4552645.110	123.0204	171.0096	106.0150	221.258	238.391	398.378
132	Nilsu Gümrükçü	10210606	417717.229	4552614.055	417914.473	4552635.084	168.0183	180.0162	170.0101	239.263	354.263	361.353
133	Nilüfer Ekşi	10200808	417634.213	4552599.062	417834.414	4552649.080	171.0096	152.0188	82.0104	358.288	382.392	252.325
134	Nisa Nur Yıldırım	10200554	417702.237	4552618.052	417859.470	4552636.078	212.0168	151.0102	137.0198	313.219	244.324	225.232
135	Nisa Özdemir	10190628	417658.222	4552629.060	417912.444	4552644.078	141.0144	151.0151	129.0083	271.241	318.395	347.302
136	Oğuzhan Demir	10170539	417687.202	4552623.073	417909.451	4552651.095	129.0107	130.0136	213.0146	321.377	296.238	378.353
137	Ömer Arda Atalay	10200632	417643.256	4552621.087	417830.436	4552634.113	147.0191	107.0129	114.0094	254.342	334.331	248.388
138	Ömer Faruk İsmailoğulları	10190520	417638.289	4552612.096	417854.442	4552646.077	197.0124	191.0216	145.0094	227.270	288.395	359.347
139	Ömer Faruk Yıldırım	10200641	417644.286	4552621.092	417870.418	4552625.105	125.0146	151.0090	174.0175	340.259	314.335	270.303
140	Ömer Yusuf Doğan	10200527	417661.252	4552623.051	417882.497	4552646.103	100.0167	177.0142	182.0148	232.273	273.362	248.365
141	Onat Dirgar	10180644	417693.239	4552641.100	417915.416	4552667.083	111.0151	168.0151	125.0135	200.360	360.338	202.295
142	Onur Mert Özyedierler	10200529	417714.284	4552647.060	417890.442	4552621.083	158.0101	95.0166	184.0131	395.282	342.282	236.340
143	Onur Ünal	10200637	417699.243	4552623.087	417817.493	4552624.085	127.0119	135.0144	140.0119	330.263	216.343	360.235
144	Orhan Bölek	10190637	417627.217	4552626.093	417834.424	4552638.106	129.0155	218.0180	172.0099	362.283	310.201	210.389
145	Orkun Konak	10200601	417662.232	4552647.062	417888.428	4552628.100	212.0103	151.0177	93.0172	285.228	382.290	279.236
146	Osman Derviş Kıtay	10190530	417684.252	4552607.100	417831.497	4552648.093	207.0113	192.0138	155.0135	378.200	256.371	399.345
147	Osman Korkmaz	10180808	417625.293	4552620.062	417837.463	4552623.119	220.0145	213.0152	158.0182	254.400	211.231	250.334

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148	Öykü Şara Sevim	10200562	417627.203	4552631.089	417898.478	4552651.091	107.0160	183.0184	104.0148	367.381	209.319	352.369
149	Ozan Yılmaz	10200542	417617.284	4552600.068	417843.430	4552618.078	205.0098	211.0083	122.0165	289.322	381.226	296.221
150	Özge Şeyma Özsoy	10200559	417657.203	4552602.076	417827.485	4552644.114	131.0151	123.0196	88.0093	245.256	313.212	233.309
151	Özge Zelal Arat	10210623	417630.298	4552628.067	417911.454	4552623.092	190.0096	90.0117	95.0212	217.262	296.391	398.324
152	Özkan Tahin	10200532	417626.267	4552626.089	417817.412	4552657.090	117.0183	116.0179	151.0212	345.305	205.290	349.244
153	Pelin Şirin	10210657	417628.220	4552632.097	417830.470	4552639.079	179.0092	185.0093	96.0141	229.386	252.231	355.221
154	Rıdvan Ali Atmaca	10200513	417636.259	4552621.087	417834.421	4552645.089	96.0196	115.0203	133.0133	295.272	358.222	353.346
155	Rümeysa Yapalak	10200546	417640.293	4552604.080	417861.403	4552658.108	174.0150	206.0108	94.0107	230.340	225.209	262.316
156	Rümeysa Zeybek	10190607	417646.254	4552615.068	417822.490	4552622.096	207.0136	154.0205	210.0108	297.236	228.321	373.364
157	Ruveyda Nur Türker	10190634	417624.254	4552605.091	417820.461	4552645.094	113.0159	97.0119	178.0081	344.278	372.217	224.292
158	Sahra Melek Üzüm	10200614	417657.274	4552635.066	417884.452	4552632.074	212.0105	126.0165	189.0088	329.372	274.244	327.391
159	Sajjad Rıyadh Shınjar Alghezı	501211658	417672.216	4552640.094	417818.400	4552633.072	158.0113	202.0207	134.0103	391.364	238.394	282.376
160	Salih Tatcı	10200567	417663.270	4552622.059	417888.427	4552656.078	106.0189	184.0115	104.0142	217.249	291.345	325.329
161	Samet Gözgören	10200602	417619.262	4552628.063	417870.476	4552659.081	86.0151	197.0178	118.0156	211.280	260.397	317.289
162	Sara Khaki İlkhechi	10210931	417671.241	4552633.073	417913.447	4552643.103	220.0187	203.0182	209.0116	239.279	396.285	228.233
163	Seda Nur Kara	10180658	417712.253	4552619.070	417818.462	4552622.112	80.0196	138.0116	145.0098	296.296	214.260	261.381
164	Sedef Erdoğan	10200509	417621.277	4552640.089	417892.465	4552651.106	182.0157	85.0176	148.0092	348.322	207.268	305.286
165	Selçuk Fırat	10200643	417620.292	4552606.086	417879.439	4552657.112	209.0114	205.0169	214.0147	257.201	278.393	371.387
166	Selen Cansun Kırgöz	10190641	417713.202	4552642.086	417870.452	4552644.090	197.0166	139.0120	86.0169	233.248	319.288	224.337
167	Selim Çalılık	10200624	417641.201	4552601.053	417821.417	4552645.120	163.0099	203.0110	150.0164	239.282	269.398	347.272
168	Selim Seymen	10180542	417662.206	4552598.054	417885.499	4552639.110	112.0117	187.0205	101.0088	345.317	236.200	344.260
169	Selin Erman	10200617	417634.271	4552602.068	417849.409	4552628.070	107.0181	98.0191	121.0111	304.232	261.376	288.391
170	Selvihan Pınar	10190549	417638.217	4552619.095	417856.429	4552629.078	211.0142	95.0194	122.0170	249.296	390.241	257.333
171	Serdar Sakallı	10200510	417680.226	4552613.056	417909.443	4552619.100	98.0113	197.0188	191.0147	205.305	398.261	227.219
172	Serenay Tuna Firengiz	10200550	417639.260	4552624.056	417882.489	4552667.107	86.0204	111.0206	201.0081	379.361	281.330	382.323

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#	Students	Student ID	Point A		Point B		Traverse Angle			Distance Measurement		
			Y (m)	X (m)	Y (m)	X (m)	βB (g)	$\beta 1$ (g)	$\beta 2$ (g)	S_{B1} (m)	S_{12} (m)	S_{23} (m)
173	Servet Günay	10180565	417665.288	4552600.059	417858.400	4552649.070	193.0168	90.0201	118.0182	229.210	291.350	386.225
174	Şevval Alaca	10180624	417668.261	4552601.054	417845.449	4552644.113	216.0155	189.0159	204.0132	379.263	319.223	338.320
175	Şevval Begüm Uysal	10200538	417669.295	4552598.095	417911.450	4552661.104	119.0108	112.0178	129.0191	293.226	277.385	354.235
176	Şevval Çeştan	10200651	417705.220	4552642.099	417916.403	4552647.113	117.0219	124.0129	216.0143	300.317	275.369	376.280
177	Şevval Kuşaksız	10200607	417690.212	4552646.083	417881.484	4552635.071	104.0180	114.0131	117.0129	248.316	201.222	368.234
178	Sıla Hamtez	10200660	417660.203	4552604.097	417899.490	4552638.114	155.0130	85.0144	213.0209	278.400	345.219	304.349
179	Sinan Kalkan	10190570	417679.300	4552606.070	417858.445	4552645.119	208.0119	87.0169	101.0143	222.294	200.304	322.391
180	Şinda Korkut	10210714	417697.224	4552615.085	417883.499	4552626.103	100.0217	112.0145	81.0147	377.317	213.400	400.355
181	Sude Karslı	10200520	417706.266	4552608.073	417889.435	4552621.079	140.0156	161.0122	97.0196	216.385	347.259	349.279
182	Tunacan Taplı	10200545	417710.202	4552633.069	417862.407	4552659.081	132.0116	99.0173	148.0197	309.297	283.227	299.327
183	Tunahan Bayraktar	10210566	417713.273	4552624.061	417877.464	4552644.083	204.0179	141.0100	164.0151	253.240	220.251	268.377
184	Tunahan Özdemir	10210709	417660.244	4552640.064	417875.472	4552658.084	127.0176	207.0188	132.0184	246.280	281.343	340.245
185	Yakup Kazancı	10210810	417696.269	4552647.072	417890.416	4552636.110	192.0198	117.0209	91.0212	379.227	334.381	232.216
186	Yaren Çakır	10190661	417683.227	4552639.078	417851.407	4552656.107	220.0178	87.0085	164.0090	305.380	376.204	237.253
187	Yaşar Emre Orman	10200570	417630.211	4552616.076	417915.414	4552665.082	116.0112	178.0092	86.0113	375.203	281.336	320.273
188	Yasemin Bilen	10170534	417682.291	4552648.067	417901.417	4552639.108	175.0086	188.0181	214.0218	255.352	209.331	239.392
189	Yılmaz Can Gümüş	10200551	417642.236	4552641.090	417831.495	4552627.111	103.0182	170.0195	107.0188	330.210	223.275	289.358
190	Yunus Berkay Aydın	10210713	417675.210	4552620.095	417908.430	4552656.119	215.0131	177.0154	99.0199	205.374	348.364	223.299
191	Zehra Merve Kurt	10200640	417686.267	4552624.071	417896.416	4552632.112	135.0206	176.0141	171.0088	229.370	363.300	339.348
192	Zeynep Ceyda Karakaya	10200621	417647.223	4552616.096	417889.447	4552618.102	111.0144	97.0152	131.0122	330.241	257.330	333.236
193	Zeynep Günaydın	10200519	417657.254	4552606.051	417888.495	4552661.073	100.0174	161.0092	167.0137	253.367	275.229	259.378
194	Zeynep Kuru	10210538	417709.228	4552617.078	417899.401	4552640.117	193.0134	149.0213	155.0095	353.308	286.246	228.272
195	Zeynep Mısra Kardaş	10200649	417705.206	4552611.060	417873.460	4552625.114	137.0199	104.0217	209.0109	273.364	223.243	277.246
196	Zeynep Rana Şamil	10200609	417653.290	4552647.075	417840.481	4552645.085	91.0131	192.0120	201.0201	334.329	345.330	329.264
197	Zeynep Yeten	10200628	417657.288	4552608.085	417893.450	4552622.089	162.0141	151.0166	96.0113	361.220	355.275	250.305
198	Zuhal Çakmak	10200544	417704.289	4552644.081	417823.402	4552628.116	89.0129	156.0215	97.0135	341.343	337.376	313.245

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PART II: Electronic Tacheometry Calculation

#	Students	Student ID	Point 101		Point 102		Horizontal (layout) Angle (g)	Zenith Angle (g)	Slope Distance (m)	Instrument Height (h$_i$) (m)	Reflector Height (h$_r$) (m)
			Y (m)	X (m)	Y (m)	X (m)					
1	Abdulkadir Aslan	10210552	417646.264	4552630.095	417906.457	4552640.081	168.8943	107.3064	18.139	1.80	1.50
2	Abdulkerim Şimşek	10180510	417659.214	4552611.095	417901.445	4552637.094	201.8482	105.6281	158.366	1.64	1.50
3	Abdurrahim Gider	10200606	417630.299	4552635.100	417910.487	4552631.073	116.2822	104.3343	33.226	1.44	1.50
4	Ahmet Arda Bilgin	10200612	417645.239	4552634.087	417865.447	4552650.110	183.2572	98.4756	16.872	1.71	1.50
5	Ahmet Emir Yılmaz	10200518	417618.265	4552601.093	417820.457	4552663.071	189.8230	103.5843	99.766	1.45	1.50
6	Alalddın Ibrahım Abbas Owaıs	10210933	417675.245	4552620.071	417878.485	4552667.116	161.1438	107.8027	43.383	1.26	1.50
7	Aleyna Bayram	10200521	417648.286	4552629.069	417896.495	4552659.118	140.5049	95.0500	159.761	1.26	1.50
8	Aleyna Şaşmaz	10200618	417678.282	4552628.089	417862.460	4552645.101	185.3795	101.6784	125.482	1.67	1.50
9	Alper Kaan Özbek	10210659	417713.262	4552601.069	417872.446	4552618.117	149.7422	104.4947	58.871	1.06	1.50
10	Amir Alhac	10150912	417660.250	4552612.062	417886.411	4552623.108	154.9415	106.0885	43.367	1.31	1.50
11	Ammar Balur	10210563	417711.257	4552631.098	417893.454	4552624.081	130.6337	111.1250	190.914	1.41	1.50
12	Aşkınnur Türedi	10200608	417663.294	4552644.088	417881.476	4552621.092	163.8827	115.0548	9.471	1.34	1.50
13	Aslı Bal	10200507	417627.233	4552612.065	417898.484	4552634.101	126.2044	96.2150	106.178	1.72	1.50
14	Aslı Tuncer	10200514	417621.226	4552643.093	417895.423	4552626.107	141.1978	96.1292	70.852	1.29	1.50
15	Ata Eren Özavcı	10200522	417675.239	4552629.077	417885.416	4552668.089	183.2847	99.7294	183.165	1.62	1.50
16	Ata Yoldaş Balta	10190572	417663.237	4552599.080	417877.416	4552667.109	132.1105	115.9100	78.657	1.63	1.50
17	Ayça Perihan Kılıç	10200626	417625.202	4552627.060	417858.426	4552665.072	144.1646	114.8231	27.067	1.60	1.50
18	Ayça Songur	10190617	417624.292	4552620.067	417917.496	4552655.074	109.0026	101.9923	34.153	1.74	1.50
19	Ayça Yerlikaya	10200603	417689.281	4552643.064	417885.464	4552642.098	196.3288	108.0468	97.309	1.90	1.50

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#	Students	Student ID	Point 101		Point 102		Horizontal (layout) Angle (g)	Zenith Angle (g)	Slope Distance (m)	Instrument Height (h_i) (m)	Reflector Height (h_r) (m)
			Y (m)	X(m)	Y (m)	X(m)					
20	Ayda Aydın	10200541	417622.210	4552605.097	417859.497	4552665.079	131.6704	110.9187	39.046	1.59	1.50
21	Barış Özçimenli	10210616	417672.202	4552629.069	417879.431	4552627.087	148.9425	106.2646	122.383	1.24	1.50
22	Başak Çakır	10200516	417675.224	4552642.054	417838.442	4552659.077	202.8997	101.5365	36.986	1.49	1.50
23	Başak Şahin	10200616	417638.229	4552647.060	417818.454	4552621.079	101.3358	110.9075	125.976	1.01	1.50
24	Batuhan Alkaya	10210608	417679.237	4552606.082	417847.416	4552651.072	183.8244	103.2916	107.471	1.45	1.50
25	Batuhan Özdemir	10200547	417713.261	4552620.078	417865.414	4552655.086	181.2789	116.2471	183.766	1.27	1.50
26	Batuhan Yakut	10190502	417670.283	4552618.079	417831.403	4552666.102	196.6390	115.2499	163.928	1.20	1.50
27	Berk Yetim	10180558	417680.285	4552603.070	417915.403	4552633.104	180.8926	96.5382	74.391	1.14	1.50
28	Berkay Korik	10190545	417696.282	4552610.088	417882.449	4552634.106	162.1226	97.6168	20.139	1.52	1.50
29	Berkay Özkaşlı	10190538	417713.264	4552640.050	417857.472	4552641.119	149.4567	91.8110	186.623	1.31	1.50
30	Berke Kamilcan Vardar	10210712	417649.248	4552618.056	417908.412	4552622.072	190.5978	97.4925	24.664	1.34	1.50
31	Beste İrem Şengöz	10200511	417704.224	4552624.073	417823.436	4552622.073	185.2200	107.8456	56.473	1.19	1.50
32	Betül Özübek	10200537	417654.226	4552632.051	417865.494	4552622.073	157.1776	109.7990	113.551	1.46	1.50
33	Betül Peker	10200565	417701.296	4552608.082	417835.457	4552657.075	173.5585	110.0418	102.617	1.88	1.50
34	Beyza Bilge Payal	10210631	417668.289	4552605.071	417827.484	4552652.094	178.9908	98.2921	77.297	1.05	1.50
35	Beyza Cihan	10200548	417709.232	4552642.084	417835.441	4552623.118	107.1176	107.8768	192.911	1.46	1.50
36	Beyza Korkmaz	10200654	417708.275	4552648.100	417855.483	4552626.106	152.3658	108.7038	128.798	1.40	1.50
37	Beyza Nur Karadana	10180540	417641.283	4552636.092	417860.474	4552619.080	145.8469	96.7096	196.375	1.80	1.50
38	Beyzanur Aybek	10200656	417657.208	4552601.053	417872.412	4552653.106	162.1340	97.9469	203.710	1.07	1.50
39	Can Mıchael Hucko	10210632	417653.235	4552637.058	417839.458	4552621.118	162.6066	110.3569	132.589	1.60	1.50
40	Ceyda Okur	10200508	417699.206	4552641.057	417916.422	4552656.103	166.7749	113.5396	148.357	1.97	1.50
41	Ceyda Sağlam	10200555	417668.266	4552636.055	417844.430	4552650.107	184.0668	102.8698	91.546	1.88	1.50
42	Ceyda Tabak	10200657	417716.281	4552617.054	417842.419	4552636.115	146.4143	100.8190	208.804	1.96	1.50
43	Damla Su Beytekin	10210549	417692.293	4552610.073	417909.473	4552636.107	161.2124	97.7887	138.578	1.71	1.50
44	Deniz Çelen	10150628	417644.267	4552622.056	417882.454	4552622.072	112.3126	96.7009	170.891	1.60	1.50

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#	Students	Student ID	Point 101		Point 102		Horizontal (layout) Angle (g)	Zenith Angle (g)	Slope Distance (m)	Instrument Height (h$_i$) (m)	Reflector Height (h$_r$) (m)
			Y (m)	X(m)	Y (m)	X(m)					
45	Deniz Yavuz	10200634	417664.296	4552644.091	417840.470	4552668.105	109.0252	102.2126	60.120	1.86	1.50
46	Dilara Başer	10200629	417673.285	4552642.050	417880.412	4552654.082	149.5778	96.0069	185.842	1.55	1.50
47	Doğan Keleş	10140521	417694.205	4552645.067	417880.486	4552654.096	178.0867	94.7575	84.416	1.89	1.50
48	Doğancan Doğan	10200523	417692.218	4552619.058	417857.406	4552657.098	184.7052	108.8629	188.954	1.46	1.50
49	Ebrar Gökçe Akman	10210562	417699.274	4552626.095	417862.420	4552628.086	140.6621	107.0993	64.101	1.34	1.50
50	Ece Karaman	10200623	417655.268	4552645.071	417912.484	4552662.095	131.1760	114.1108	131.267	1.06	1.50
51	Ece Nihan Doğudan	10200653	417635.260	4552639.092	417911.469	4552664.073	141.5156	104.1194	69.921	1.22	1.50
52	Ecrin Kuyu	10200534	417645.252	4552629.074	417909.419	4552642.078	146.6604	96.6317	18.750	1.77	1.50
53	Efe Güder	10200563	417625.240	4552631.086	417826.426	4552622.092	112.0642	95.0714	61.080	1.96	1.50
54	Elif Kızılırmak	10200553	417625.223	4552639.068	417860.410	4552638.100	147.2468	99.0380	158.453	1.80	1.50
55	Elif Nur Kayhan	10200647	417624.287	4552611.075	417827.470	4552664.117	127.6481	108.2934	94.624	1.21	1.50
56	Elif Sude Çetinel	10200560	417627.257	4552609.091	417827.464	4552654.098	132.5029	112.7282	91.639	1.21	1.50
57	Emir Albayrak	10210541	417694.207	4552612.075	417902.425	4552646.112	104.8245	102.1955	126.481	1.62	1.50
58	Emircan Korkmaz	10200566	417708.251	4552635.072	417868.409	4552653.093	116.7951	105.4278	127.286	1.92	1.50
59	Emirhan Baran	10210548	417660.253	4552637.066	417824.425	4552661.120	139.3622	106.5204	93.999	1.98	1.50
60	Emirhan Göksu	10200558	417628.231	4552624.060	417821.451	4552640.079	151.5229	103.1579	74.856	1.21	1.50
61	Emre Aktaş	10200642	417710.247	4552634.053	417865.475	4552648.088	109.2294	98.7523	69.808	1.10	1.50
62	Emre Candabakoğlu	10210601	417676.276	4552619.087	417892.467	4552639.098	168.0756	107.8287	81.779	1.13	1.50
63	Ender Baran Toprak	10200650	417717.257	4552621.083	417899.438	4552618.108	128.2169	103.9451	155.055	1.15	1.50
64	Enes Batuhan Koç	10200528	417702.262	4552635.085	417874.480	4552633.092	150.8492	101.5266	131.716	1.29	1.50
65	Engin Yaman	10200517	417660.290	4552599.051	417884.476	4552651.110	103.7370	99.7227	156.505	1.33	1.50
66	Eren Oral	10200639	417706.209	4552607.082	417886.414	4552632.112	115.2530	115.7150	88.398	1.61	1.50
67	Etem Tincan	10190651	417682.226	4552644.052	417817.412	4552657.094	187.1423	93.5376	106.866	1.57	1.50
68	Eylül Bavuş	10200648	417622.248	4552632.058	417912.500	4552646.111	189.7653	105.7052	163.444	1.49	1.50
69	Eylül Nur Kayabaşı	10200515	417669.238	4552612.066	417875.467	4552619.094	174.2626	98.9301	11.117	1.50	1.50

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#	Students	Student ID	Point 101		Point 102		Horizontal (layout) Angle (g)	Zenith Angle (g)	Slope Distance (m)	Instrument Height (h_i) (m)	Reflector Height (h_r) (m)
			Y (m)	X(m)	Y (m)	X(m)					
70	Ezgi Çingigiray	10190649	417688.253	4552647.059	417817.408	4552636.073	140.0591	93.4989	173.357	1.64	1.50
71	Fatih Tunç	10200571	417705.279	4552600.064	417824.456	4552658.078	124.1819	102.4006	136.876	1.81	1.50
72	Feyza Sunker	10210553	417710.236	4552629.060	417837.426	4552646.107	189.3937	115.7539	61.848	1.12	1.50
73	Feyza Yurdakul	10200569	417679.278	4552640.095	417851.444	4552654.107	192.1754	97.0319	203.634	1.99	1.50
74	Feyzi Ege Danacıoğlu	10190643	417657.245	4552634.085	417819.451	4552645.115	166.0839	96.5047	150.189	1.10	1.50
75	Furkan Vatansever	10200536	417669.230	4552647.059	417914.420	4552620.074	117.9310	107.1001	24.739	1.19	1.50
76	Gafur Semi Şengül	10180661	417706.267	4552619.065	417823.470	4552621.078	129.9202	106.2124	86.625	1.40	1.50
77	Gizem Aytaç	10200636	417712.255	4552628.097	417830.447	4552640.117	189.5701	96.5380	78.416	1.81	1.50
78	Gökdeniz Kılıç	10200568	417685.240	4552623.061	417846.465	4552659.089	138.0869	102.5935	88.728	1.82	1.50
79	Gökhan Demir	10200552	417635.217	4552631.089	417916.459	4552648.085	131.9215	103.1878	156.103	1.39	1.50
80	Gülsüm Yıldız	10200605	417651.274	4552642.058	417859.407	4552658.076	127.0571	99.8352	201.399	1.73	1.50
81	Habib Kapan	10190811	417677.279	4552604.070	417860.445	4552635.097	165.9870	105.6897	34.399	1.55	1.50
82	Halil Cem Haklı	10200525	417634.267	4552636.070	417845.447	4552665.090	191.4738	104.1557	76.464	1.23	1.50
83	Halime Beyza Baykal	10190610	417690.293	4552614.066	417871.414	4552640.082	192.8171	99.7957	153.952	1.96	1.50
84	Harun Ünsün	10200812	417676.278	4552643.092	417863.458	4552634.101	195.4182	96.9525	37.747	1.57	1.50
85	Hatice Derya Abalı	10200549	417664.239	4552631.064	417831.414	4552656.111	135.1018	107.9998	137.905	1.37	1.50
86	Hatice Kübra Öter	10200503	417695.235	4552612.055	417873.448	4552657.072	184.6421	102.1298	61.644	1.49	1.50
87	Hatice Sınır	10200630	417685.238	4552625.053	417860.405	4552653.092	120.8231	98.5904	66.297	1.81	1.50
88	Hatice Türkan Ayaz	10200557	417647.260	4552608.054	417881.476	4552648.076	130.9475	93.2668	23.513	1.66	1.50
89	Havva Aybike Yıldırım	10200535	417659.234	4552632.071	417903.447	4552621.120	146.6489	117.0333	175.219	1.68	1.50
90	Hilal Balcı	10190573	417703.276	4552600.065	417898.412	4552618.100	139.7015	110.3105	148.796	1.33	1.50
91	Hossamaldın Awıs	10210934	417686.243	4552617.050	417866.429	4552658.087	160.0059	105.9125	27.468	1.40	1.50
92	İbrahim Korkmaz	10200807	417641.251	4552608.050	417863.496	4552652.114	132.2344	110.2240	163.827	1.65	1.50
93	İbrahim Polat	10190540	417689.242	4552637.057	417896.433	4552664.105	177.1015	118.9609	70.746	1.07	1.50
94	İlayda Eser	10200625	417707.200	4552600.082	417824.408	4552651.104	112.9491	108.0522	194.564	1.63	1.50

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			Y (m)	X(m)	Y (m)	X(m)					
95	İlayda Önsay	10200619	417659.247	4552635.079	417828.455	4552662.076	203.1024	115.8840	122.854	1.77	1.50
96	Ilgar Doruk Aslan	10200620	417633.229	4552603.070	417850.470	4552665.106	200.0129	112.3452	48.407	1.43	1.50
97	İlya Deniz İnanç	10210641	417644.280	4552599.066	417916.460	4552639.071	185.6520	105.8451	142.484	1.06	1.50
98	İrem Ağbağ	10210656	417678.272	4552617.100	417889.400	4552628.113	178.9151	107.5359	79.130	1.36	1.50
99	İrem İstek	10200512	417712.287	4552627.100	417866.439	4552662.117	110.3135	108.8549	96.289	1.02	1.50
100	İrem Nur Özer	10200533	417654.218	4552599.097	417914.495	4552624.070	171.6184	106.4507	140.499	1.91	1.50
101	İrem Odabaşı	10200564	417680.271	4552622.055	417844.413	4552620.075	162.7512	103.4281	65.372	2.00	1.50
102	İrem Sultan Şen	10210711	417648.256	4552608.087	417903.406	4552646.073	155.3693	118.4455	139.989	1.28	1.50
103	İsmail Şafak Erdoğan	10200530	417646.246	4552615.065	417869.432	4552644.108	103.5509	96.5183	109.495	1.86	1.50
104	Kaan Şentürk	10210710	417716.243	4552600.088	417911.413	4552652.100	126.7960	93.5153	88.711	1.93	1.50
105	Kamil Bahadır Baş	10210612	417703.279	4552632.095	417904.485	4552621.076	144.7077	103.1966	185.992	1.28	1.50
106	Kendal Turan	10200627	417679.201	4552607.074	417903.464	4552621.091	181.3258	101.1530	130.109	1.43	1.50
107	Kerim İpek	10200505	417671.278	4552638.076	417835.441	4552662.080	188.1982	110.4507	46.800	1.32	1.50
108	Kuzey Demirkıran	10200813	417624.277	4552623.082	417885.429	4552664.096	169.9626	110.8372	162.916	1.05	1.50
109	Lara Barbaros	10200572	417649.231	4552622.051	417857.415	4552666.086	139.4212	103.9127	93.740	1.88	1.50
110	Lizge Aydın	10190567	417696.296	4552608.090	417880.434	4552622.119	119.3261	103.3373	76.310	1.80	1.50
111	Lokman Ömer Genç	10190648	417701.217	4552625.068	417915.477	4552629.076	117.7014	99.1559	183.645	1.98	1.50
112	Mehmet Bekil	10200652	417690.261	4552619.058	417866.484	4552668.119	178.0666	103.1187	187.467	1.93	1.50
113	Mehmet Salih Tüylüoğlu	10210618	417624.245	4552629.078	417902.410	4552633.083	137.4013	114.0230	16.944	1.82	1.50
114	Mehmet Yunus Sarıkaya	10200561	417706.261	4552635.092	417913.443	4552637.110	114.6451	103.9488	83.822	1.19	1.50
115	Melih Çetin	10200556	417678.273	4552632.074	417915.463	4552661.082	200.4846	94.5577	122.048	1.30	1.50
116	Melih Gökçe	10190539	417623.219	4552619.059	417820.496	4552649.111	126.9128	105.4006	176.844	1.82	1.50
117	Meliha İpek	10200811	417624.257	4552629.050	417897.444	4552643.093	180.4964	107.4689	145.277	1.78	1.50

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			Y (m)	X(m)	Y (m)	X(m)					
118	Melisa İnce	10200646	417682.237	4552640.059	417882.493	4552634.090	188.0744	98.0888	147.855	1.12	1.50
119	Mert Kalaycı	10200524	417687.293	4552644.089	417835.456	4552640.076	166.3057	92.6802	60.708	1.77	1.50
120	Mertcan Çolak	10130507	417645.245	4552610.093	417843.449	4552636.070	189.9767	96.4852	107.791	1.81	1.50
121	Meryem Özer	10200531	417644.203	4552629.058	417893.438	4552648.120	190.6008	105.2600	199.636	1.01	1.50
122	Mevlüt Can Erbaş	10180512	417707.238	4552600.068	417866.497	4552654.079	206.4215	90.6410	133.062	1.59	1.50
123	Muhammet Azam Kotan	10200633	417667.282	4552622.069	417840.406	4552626.097	159.4060	108.0351	20.966	1.89	1.50
124	Murat Öz	10210648	417663.282	4552615.057	417883.468	4552619.081	184.0661	92.7555	188.261	1.64	1.50
125	Mustafa Uğur	10190639	417622.284	4552635.089	417870.400	4552658.104	205.1554	95.3691	113.942	1.38	1.50
126	Mustafa Umut Özdemir	10200543	417652.271	4552628.090	417886.486	4552647.095	110.9610	99.5705	97.897	1.66	1.50
127	Nazlı Kuvvetli	10200611	417710.231	4552629.087	417843.436	4552661.086	154.0019	111.0496	156.436	1.64	1.50
128	Necati Yıldız	10210708	417632.258	4552628.097	417915.471	4552623.087	132.5641	112.9300	31.280	1.42	1.50
129	Nergiz Şahin	10180527	417714.248	4552609.090	417904.464	4552630.110	125.6451	112.0691	156.942	1.41	1.50
130	Neslihan Özer	10200539	417668.243	4552628.094	417906.476	4552656.096	148.0434	113.3526	81.537	1.91	1.50
131	Nihal Yüksel	10200658	417663.266	4552646.099	417900.424	4552657.119	105.0335	111.9881	99.199	1.22	1.50
132	Nilsu Gümrükçü	10210606	417695.280	4552635.056	417833.479	4552641.088	193.6411	99.8488	87.500	1.89	1.50
133	Nilüfer Ekşi	10200808	417635.299	4552621.099	417885.487	4552627.076	196.4522	115.0451	166.603	1.49	1.50
134	Nisa Nur Yıldırım	10200554	417624.204	4552614.056	417841.477	4552631.086	199.9063	112.3303	70.605	1.24	1.50
135	Nisa Özdemir	10190628	417688.219	4552630.060	417847.480	4552645.100	105.4193	112.3771	132.818	1.30	1.50
136	Oğuzhan Demir	10170539	417661.286	4552642.055	417824.472	4552618.094	150.1868	101.2389	115.271	1.89	1.50
137	Ömer Arda Atalay	10200632	417695.214	4552615.058	417860.457	4552634.113	128.0708	92.0987	32.920	1.29	1.50
138	Ömer Faruk İsmailoğulları	10190520	417709.275	4552637.066	417868.432	4552646.097	120.0972	105.9341	188.802	1.46	1.50
139	Ömer Faruk Yıldırım	10200641	417689.293	4552618.059	417872.406	4552668.070	131.5804	101.7682	156.063	1.54	1.50
140	Ömer Yusuf Doğan	10200527	417685.206	4552640.063	417847.478	4552658.098	139.8930	102.4929	170.716	1.92	1.50

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			Y (m)	X(m)	Y (m)	X(m)					
141	Onat Dirgar	10180644	417678.252	4552604.058	417855.401	4552644.071	176.4178	98.4122	40.822	1.96	1.50
142	Onur Mert Özyedierler	10200529	417673.244	4552646.076	417828.472	4552633.100	158.7121	101.3400	113.211	1.79	1.50
143	Onur Ünal	10200637	417644.289	4552614.074	417825.452	4552655.075	192.0216	105.9829	106.746	1.60	1.50
144	Orhan Bölek	10190637	417618.252	4552645.069	417893.408	4552628.075	184.3420	108.9800	99.161	1.55	1.50
145	Orkun Konak	10200601	417660.293	4552625.094	417887.426	4552626.075	192.8763	108.2393	36.630	1.12	1.50
146	Osman Derviş Kıtay	10190530	417656.200	4552625.087	417832.401	4552652.092	151.5337	111.8572	24.755	1.75	1.50
147	Osman Korkmaz	10180808	417672.233	4552619.086	417910.446	4552659.096	153.7938	118.5933	155.931	1.03	1.50
148	Öykü Şara Sevim	10200562	417635.267	4552625.072	417907.420	4552660.115	202.1049	105.8189	148.798	1.80	1.50
149	Ozan Yılmaz	10200542	417633.235	4552631.066	417842.422	4552665.090	111.6638	105.1982	13.899	1.69	1.50
150	Özge Şeyma Özsoy	10200559	417671.256	4552603.086	417833.415	4552667.082	151.3330	111.6034	14.962	1.33	1.50
151	Özge Zelal Arat	10210623	417662.288	4552638.073	417885.433	4552652.105	125.9275	109.1728	198.684	1.80	1.50
152	Özkan Tahin	10200532	417673.261	4552629.079	417848.425	4552653.082	182.9780	105.6483	145.942	1.90	1.50
153	Pelin Şirin	10210657	417702.219	4552608.090	417846.426	4552659.074	156.9264	99.7472	99.036	1.44	1.50
154	Rıdvan Ali Atmaca	10200513	417638.207	4552629.081	417835.496	4552629.120	135.9418	119.1511	132.387	1.74	1.50
155	Rümeysa Yapalak	10200546	417705.300	4552648.086	417894.406	4552633.091	146.3591	103.3701	43.202	1.29	1.50
156	Rümeysa Zeybek	10190607	417624.287	4552642.095	417879.447	4552621.082	164.5465	104.4587	124.819	1.88	1.50
157	Ruveyda Nur Türker	10190634	417623.201	4552621.064	417871.405	4552653.071	174.2401	95.7346	17.351	1.84	1.50
158	Sahra Melek Üzüm	10200614	417716.256	4552610.052	417916.428	4552641.096	123.0897	104.3645	197.575	1.63	1.50
159	Sajjad Rıyadh Shınjar Alghezı	501211658	417631.210	4552622.070	417841.404	4552658.116	110.9233	104.9639	76.639	1.79	1.50
160	Salih Tatcı	10200567	417636.248	4552640.091	417883.428	4552657.089	162.9395	109.2594	84.652	1.35	1.50
161	Samet Gözgören	10200602	417655.210	4552602.084	417914.428	4552643.073	205.5458	97.3381	130.800	1.45	1.50
162	Sara Khaki İlkhechi	10210931	417634.202	4552641.090	417857.495	4552635.103	178.8829	102.2690	91.945	1.39	1.50
163	Seda Nur Kara	10180658	417653.281	4552600.090	417894.422	4552663.100	191.8770	113.3130	157.479	1.53	1.50
164	Sedef Erdoğan	10200509	417644.246	4552625.085	417827.446	4552656.089	135.0877	107.5775	71.892	1.63	1.50

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			Y (m)	X(m)	Y (m)	X(m)					
165	Selçuk Fırat	10200643	417618.204	4552606.068	417856.471	4552668.104	121.0953	107.3419	201.496	1.24	1.50
166	Selen Cansun Kırgöz	10190641	417637.227	4552631.093	417865.412	4552646.102	125.5150	103.1310	185.675	1.89	1.50
167	Selim Çalılık	10200624	417660.205	4552631.099	417880.416	4552646.074	132.2730	114.3569	134.283	1.13	1.50
168	Selim Seymen	10180542	417649.277	4552636.086	417866.459	4552621.091	197.7365	96.2602	177.547	1.25	1.50
169	Selin Erman	10200617	417640.218	4552607.077	417875.491	4552635.117	131.1634	110.8540	149.054	1.39	1.50
170	Selvihan Pınar	10190549	417680.297	4552623.079	417820.432	4552641.098	193.0349	101.4734	22.837	1.68	1.50
171	Serdar Sakallı	10200510	417661.229	4552632.087	417861.474	4552619.115	111.3853	94.1617	115.909	1.11	1.50
172	Serenay Tuna Firengiz	10200550	417661.265	4552629.082	417854.407	4552618.120	102.0315	117.0317	89.344	1.04	1.50
173	Servet Günay	10180565	417638.211	4552618.086	417913.451	4552621.103	156.8218	94.9105	57.346	1.47	1.50
174	Şevval Alaca	10180624	417634.224	4552646.063	417912.409	4552624.107	197.1747	104.4843	24.010	1.64	1.50
175	Şevval Begüm Uysal	10200538	417700.290	4552604.089	417850.498	4552647.101	131.9113	98.0220	22.640	1.21	1.50
176	Şevval Çeştan	10200651	417643.205	4552629.078	417857.452	4552645.089	189.9719	111.9135	202.121	1.94	1.50
177	Şevval Kuşaksız	10200607	417650.246	4552648.078	417827.470	4552658.073	110.5713	117.5099	102.447	1.80	1.50
178	Sıla Hamtez	10200660	417654.296	4552616.090	417874.444	4552666.076	199.1852	98.2860	31.026	1.55	1.50
179	Sinan Kalkan	10190570	417701.217	4552623.083	417836.472	4552627.102	152.0962	96.0606	29.273	1.89	1.50
180	Şinda Korkut	10210714	417656.212	4552624.085	417819.499	4552662.110	110.9554	116.7367	56.355	1.25	1.50
181	Sude Karslı	10200520	417650.234	4552633.051	417817.462	4552651.076	195.9758	97.2639	203.125	1.24	1.50
182	Tunacan Taplı	10200545	417694.201	4552646.076	417844.445	4552668.079	123.0325	105.6003	89.474	1.71	1.50
183	Tunahan Bayraktar	10210566	417679.299	4552644.090	417820.494	4552641.078	136.2785	111.4037	43.792	1.66	1.50
184	Tunahan Özdemir	10210709	417691.279	4552629.079	417911.415	4552659.102	108.7241	100.5138	61.908	1.82	1.50
185	Yakup Kazancı	10210810	417712.206	4552647.057	417818.481	4552626.120	135.9308	103.3923	79.686	1.70	1.50
186	Yaren Çakır	10190661	417688.207	4552608.065	417854.423	4552623.073	124.5450	106.9625	175.359	1.93	1.50
187	Yaşar Emre Orman	10200570	417712.294	4552645.063	417827.439	4552628.120	139.3958	96.6601	76.924	1.63	1.50
188	Yasemin Bilen	10170534	417649.264	4552606.069	417917.461	4552654.076	164.0581	105.5992	189.512	1.56	1.50
189	Yılmaz Can Gümüş	10200551	417681.219	4552629.063	417821.479	4552620.091	143.9767	116.0100	193.477	1.17	1.50

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			Y (m)	X(m)	Y (m)	X(m)					
190	Yunus Berkay Aydın	10210713	417687.244	4552641.089	417869.481	4552646.100	190.4463	113.6077	48.445	1.73	1.50
191	Zehra Merve Kurt	10200640	417668.283	4552600.056	417901.448	4552655.095	151.7043	101.1792	87.306	1.17	1.50
192	Zeynep Ceyda Karakaya	10200621	417635.204	4552602.055	417839.460	4552631.076	152.8947	105.7489	174.400	1.57	1.50
193	Zeynep Günaydın	10200519	417695.276	4552632.094	417865.469	4552645.072	201.8407	106.8442	29.585	1.05	1.50
194	Zeynep Kuru	10210538	417679.283	4552630.099	417910.485	4552623.120	197.6743	100.6134	196.079	1.34	1.50
195	Zeynep Mısra Kardaş	10200649	417715.283	4552635.056	417840.466	4552663.104	139.0742	112.7403	42.647	1.63	1.50
196	Zeynep Rana Şamil	10200609	417640.209	4552632.058	417852.486	4552632.085	141.7943	103.6220	89.787	1.73	1.50
197	Zeynep Yeten	10200628	417651.258	4552620.056	417872.409	4552654.087	188.3982	94.3350	22.502	1.44	1.50
198	Zuhal Çakmak	10200544	417637.278	4552601.068	417885.458	4552630.102	160.4595	94.8711	74.330	1.50	1.50

EVALUATION CRITERIA FOR HOMEWORK

	Unsatisfactory	Good	Excellent	Total
Program execution	*Program does not execute (0pt)	Program executes correctly with no syntax or runtime errors (15pt)		15pt (max)
Correct output	Output is incorrect (0pt)	Output has minor errors such as format errors (30pt)	Program displays correct output with no errors (50pt)	50pt (max)
Design **(Input Design, Comments, Solutions)**	Inefficient design and solution (0pt)	Implemented with some incomplete explanations Solution is efficient but there are unnecessary steps (25pt)	Clearly and effectively documented, and implemented with properly defined explanations. Solution is efficient, easy to understand, and maintain (35pt)	35pt (max)
Total	0pt	70pt	100pt	100pt(max)

*If program does not execute, other evaluation criteria will not be checked and homework will be graded as 0 (zero) point.

NOTE: Any questions for homework, please contact Res.Asst. Bilal MUTLU and Res.Asst.Koray AKSU

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