Assignment

Ananth Kumar

08/09/2021

R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

 $setwd ("C:/Users/Ananth/OneDrive/Desktop/MSBA~Kent/Fall~2021/Fundamentals~of~Machine~Learning/sseetham_64060")$

I have downloaded the data from online website.

```
Assign <-read.csv("Book2.csv")
Assign
```

##		Region	Country
##	1	Australia and Oceania	Tuvalu
##	2	Central America and the Caribbean	Grenada
##	3	Europe	Russia
##	4	Sub-Saharan Africa	Sao Tome and Principe
##	5	Sub-Saharan Africa	Rwanda
##	6	Australia and Oceania	Solomon Islands
##	7	Sub-Saharan Africa	Angola
##	8	Sub-Saharan Africa	Burkina Faso
##	9	Sub-Saharan Africa	Republic of the Congo
##	10	Sub-Saharan Africa	Senegal
##	11	Asia	Kyrgyzstan
##	12	Sub-Saharan Africa	Cape Verde
##	13	Asia	Bangladesh
##	14	Central America and the Caribbean	Honduras
##	15	Asia	Mongolia
##	16	Europe	Bulgaria
##	17	Asia	Sri Lanka
##	18	Sub-Saharan Africa	Cameroon
##	19	Asia	Turkmenistan
##	20	Australia and Oceania	East Timor
##	21	Europe	Norway
##	22	Europe	Portugal
##	23	Central America and the Caribbean	Honduras
##	24	Australia and Oceania	New Zealand

##	25	Europe	Moldova
	26	Europe	France
	27	Australia and Oceania	Kiribati
	28	Sub-Saharan Africa	Mali
##	29	Europe	Norway
##	30	Sub-Saharan Africa	The Gambia
##	31	Europe	Switzerland
##	32	Sub-Saharan Africa	South Sudan
	33	Australia and Oceania	Australia
	34	Asia	Myanmar
##	35	Sub-Saharan Africa	Djibouti
##	36	Central America and the Caribbean	Costa Rica
##	37	Middle East and North Africa	Syria
##	38	Sub-Saharan Africa	The Gambia
##	39	Asia	Brunei
##	40	Europe	Bulgaria
##	41	Sub-Saharan Africa	Niger
##	42	Middle East and North Africa	Azerbaijan
##	43	Sub-Saharan Africa	The Gambia
##	44	Europe	Slovakia
##	45	Asia	Myanmar
##	46	Sub-Saharan Africa	Comoros
##	47	Europe	Iceland
##	48	Europe	Switzerland
##	49	Europe	Macedonia
##	50	Sub-Saharan Africa	Mauritania
##	51	Europe	Albania
##	52	Sub-Saharan Africa	Lesotho
##	53	Middle East and North Africa	Saudi Arabia
##	54	Sub-Saharan Africa	Sierra Leone
##	55	Sub-Saharan Africa	Sao Tome and Principe
	56	Sub-Saharan Africa	Cote d'Ivoire
	57	Australia and Oceania	Fiji
	58	Europe	Austria
	59	Europe	United Kingdom
	60	Sub-Saharan Africa	Djibouti
##		Australia and Oceania	Australia
	62 63	Europe Sub-Saharan Africa	San Marino
	64	Middle East and North Africa	Cameroon
	65	Central America and the Caribbean	Libya Haiti
##		Sub-Saharan Africa	Rwanda
	67	Sub-Saharan Africa	Gabon
	68	Central America and the Caribbean	Belize
##		Europe	Lithuania
##		Sub-Saharan Africa	Madagascar
	71	Asia	Turkmenistan
	72	Middle East and North Africa	Libya
##		Sub-Saharan Africa	Democratic Republic of the Congo
##	74	Sub-Saharan Africa	Djibouti
##	75	Middle East and North Africa	Pakistan
##	76	North America	Mexico
##	77	Australia and Oceania	Federated States of Micronesia
##	78	Asia	Laos

шш	70		F			M
##		۸	Euro	-		Monaco
	80	Aus	tralia and Ocean			Samoa
	81		Euro	-		Spain
	82		t and North Afri			Lebanon
	83		t and North Afri			Iran
	84		Sub-Saharan Afri			Zambia
	85	1	Sub-Saharan Afri			Kenya
	86		North Ameri			Mexico
	87		Sub-Saharan Afri		Sao Tome ar	-
##	88		Sub-Saharan Afri			The Gambia
##	89	Middle Eas	t and North Afri			Kuwait
##	90		Euro	=		Slovenia
##	91		Sub-Saharan Afri		Si	ierra Leone
##	92	Aus	tralia and Ocean	nia		Australia
##	93	Middle Eas	t and North Afri	lca		Azerbaijan
##	94		Euro	pe		Romania
##	95		and the Caribbe			Nicaragua
##	96	;	Sub-Saharan Afri	lca		Mali
##	97		As	sia		Malaysia
##	98	1	Sub-Saharan Afri	lca	Si	lerra Leone
##	99		North Ameri	lca		Mexico
##	100	;	Sub-Saharan Afri	ca		${\tt Mozambique}$
##		<pre>Item.Type</pre>	Sales.Channel C	Order.Priority	Order.Date	Order.ID
##	1	Baby Food	Offline	H	5/28/2010	669165933
##	2	Cereal	Online	C	8/22/2012	963881480
##	3	Office Supplies	Offline	L	05-02-2014	341417157
##	4	Fruits	Online	C	6/20/2014	514321792
##	5	Office Supplies	Offline	L	02-01-2013	115456712
##	6	Baby Food	Online	C	02-04-2015	547995746
##	7	Household	Offline	M	4/23/2011	135425221
##	8	Vegetables	Online	Н	7/17/2012	871543967
##	9	Personal Care	Offline	M	7/14/2015	770463311
##	10	Cereal	Online	Н	4/18/2014	616607081
##	11	Vegetables	Online	H	6/24/2011	814711606
##	12	Clothes	Offline	H	08-02-2014	939825713
##	13	Clothes	Online	L	1/13/2017	187310731
##	14	Household	Offline	H	02-08-2017	522840487
##	15	Personal Care	Offline	C	2/19/2014	832401311
##	16	Clothes	Online	M	4/23/2012	972292029
##	17	Cosmetics	Offline	M	11/19/2016	419123971
##	18	Beverages	Offline	C	04-01-2015	519820964
##	19	Household	Offline	L	12/30/2010	441619336
##	20	Meat	Online	L	7/31/2012	322067916
##	21	Baby Food	Online	L	5/14/2014	819028031
##	22	Baby Food	Online	H	7/31/2015	860673511
##	23	Snacks	Online	L	6/30/2016	795490682
##	24	Fruits	Online	Н	09-08-2014	142278373
##	25	Personal Care	Online	L	05-07-2016	740147912
##	26	Cosmetics	Online	Н	5/22/2017	898523128
##	27	Fruits	Online	М	10/13/2014	
##	28	Fruits	Online		05-07-2010	
##		Beverages	Offline	C	7/18/2014	
##	30	Household	Offline	L	5/26/2012	
##	31	Cosmetics	Offline	М	9/17/2012	

##	32	Personal Care	Offline		12/29/2013	
##	33	Office Supplies	Online	C	10/27/2015	
##	34	Household	Offline	H	1/16/2015	
##	35	Snacks	Online	M	2/25/2017	756274640
##	36	Personal Care	Offline	L	05-08-2017	456767165
##	37	Fruits	Online	L	11/22/2011	162052476
##	38	Meat	Online	M	1/14/2017	825304400
##	39	Office Supplies	Online	L	04-01-2012	320009267
##	40	Office Supplies	Online	M	2/16/2012	189965903
##	41	Personal Care	Online	H	03-11-2017	699285638
##	42	Cosmetics	Online	M	02-06-2010	382392299
##	43	Cereal	Offline	Н	06-07-2012	994022214
##	44	Vegetables	Online	Н	10-06-2012	759224212
##	45	Clothes	Online	Н	11/14/2015	223359620
##	46	Cereal	Offline	Н	3/29/2016	
##	47	Cosmetics	Online	С	12/31/2016	
	48	Personal Care	Online		12/23/2010	
	49	Clothes	Offline		10/14/2014	
	50	Office Supplies	Offline		01-11-2012	
	51	Clothes	Online		02-02-2010	
	52	Fruits	Online	L	8/18/2013	
	53	Cereal	Online	_ M	3/25/2013	
	54	Office Supplies	Offline		11/26/2011	
	55	Fruits	Offline	Н	9/17/2013	
	56	Clothes	Online		06-08-2012	
	57	Clothes	Offline	C	6/30/2010	
	58	Cosmetics	Offline	Н	2/23/2015	
	59	Household	Online		01-05-2012	
	60	Cosmetics	Offline		04-07-2014	
	61	Cereal	Offline		06-09-2013	
	62	Baby Food	Online	L L	6/26/2013	
	63	Office Supplies	Online		11-07-2011	
	64	Clothes	Offline		10/30/2010	
	65	Cosmetics	Offline		10/13/2013	
	66	Cosmetics	Offline		10-11-2013	
	67	Personal Care	Offline		07-08-2012	
	68	Clothes	Offline		7/25/2016	
	69	Office Supplies	Offline		10/24/2010	
	70	Clothes	Offline	L	4/25/2015	
	71	Office Supplies	Online	M	4/23/2013	
	72	Fruits	Online	L	8/14/2015	
	73	Beverages	Online	C	5/26/2011	
	74	Cereal	Online	H	5/20/2017	
	75	Cosmetics	Offline		07-05-2013	
	76	Household	Offline		11-06-2014	
##	77	Beverages	Online	C	10/28/2014	
	78	Vegetables	Offline	С	9/15/2011	
##	79	Baby Food	Offline	H	5/29/2012	688288152
##	80	Cosmetics	Online	Н	7/20/2013	670854651
##	81	Household	Offline	L	10/21/2012	213487374
##	82	Clothes	Online	L	9/18/2012	663110148
##	83	Cosmetics	Online	Н	11/15/2016	286959302
##	84	Snacks	Online	L	01-04-2011	122583663
##	85	Vegetables	Online	L	3/18/2012	827844560
		-				

##	86	Personal Care		Offline		L 2/17/2012	430915820
	87	Beverages		Offline		C 1/16/2011	
##	88	Baby Food		Offline		M 02-03-2014	
##	89	Fruits		Online		M 4/30/2012	
##	90	Beverages		Offline		C 10/23/2016	
##	91	Office Supplies		Offline		Н 12-06-2016	
##	92	Beverages		Offline		Н 07-07-2014	240470397
##	93	Office Supplies		Online		M 6/13/2012	423331391
##	94	Cosmetics		Online		H 11/26/2010	660643374
##	95	Beverages		Offline		C 02-08-2011	963392674
##	96	Clothes		Online		M 7/26/2011	512878119
##	97	Fruits		Offline		L 11-11-2011	
##	98	Vegetables		Offline		C 06-01-2016	
##	99	Personal Care		Offline		M 7/30/2015	
##	100	Household		Offline		L 02-10-2012	
##		Ship.Date Unit					
##		6/27/2010	9925	255.28	159.42		1582243.50
	2	9/15/2012	2804	205.70	117.11	576782.80	
	3	05-08-2014	1779	651.21	524.96	1158502.59	
##		07-05-2014	8102	9.33	6.92	75591.66	56065.84
##		02-06-2013	5062	651.21	524.96		2657347.52
##		2/21/2015	2974	255.28	159.42	759202.72	474115.08
##		4/27/2011	4187	668.27	502.54	1245112.92	2104134.98 734896.26
	8 9	7/27/2012 8/25/2015	8082 6070	154.06 81.73	90.93 56.67	496101.10	
	10	5/30/2014	6593	205.70	117.11	1356180.10	
	11	07-12-2011	124	154.06	90.93	19103.44	
##	12	8/19/2014	4168	109.28	35.84	455479.04	
	13	03-01-2017	8263	109.28	35.84	902980.64	296145.92
	14	2/13/2017	8974	668.27	502.54		4509793.96
	15	2/23/2014	4901	81.73	56.67	400558.73	277739.67
##	16	06-03-2012	1673	109.28	35.84	182825.44	59960.32
##	17	12/18/2016	6952	437.20	263.33	3039414.40	1830670.16
##	18	4/18/2015	5430	47.45	31.79	257653.50	172619.70
##	19	1/20/2011	3830	668.27	502.54	2559474.10	1924728.20
##	20	09-11-2012	5908	421.89	364.69	2492526.12	2154588.52
##	21	6/28/2014	7450	255.28	159.42	1901836.00	1187679.00
##	22	09-03-2015	1273	255.28	159.42	324971.44	
##	23	7/26/2016	2225	152.58	97.44	339490.50	
	24	10-04-2014	2187	9.33	6.92	20404.71	
	25	05-10-2016	5070	81.73	56.67	414371.10	
##		06-05-2017	1815	437.20	263.33	793518.00	
	27	11-10-2014	5398	9.33	6.92	50363.34	
	28	05-10-2010	5822	9.33	6.92	54319.26	
	29	7/30/2014	5124	47.45	31.79	243133.80	
	30	06-09-2012	2370	668.27	502.54		1191019.80
	31	10/20/2012	8661	437.20	263.33		2280701.13
	32 33	1/28/2014 11/25/2015	2125	81.73	56.67	173676.25	120423.75 1534983.04
			2924	651.21	524.96		
	34 35	03-01-2015 2/25/2017	8250 7327	668.27	502.54	5513227.50 1117953.66	4145955.00 713942.88
	35 36	5/21/2017 5/21/2017	6409	152.58 81.73	97.44 56.67	523807.57	
	37	12-03-2011	3784	9.33	6.92	35304.72	26185.28
	38	1/23/2017	4767	421.89	364.69		1738477.23
π#	50	1/20/2011	±101	721.09	504.05	2011149.00	1100111.23

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	39	05-08-2012	6708	651.21	524.96		3521431.68
	40	2/28/2012	3987	651.21	524.96		2093015.52
	41	3/28/2017	3015	81.73	56.67	246415.95	170860.05
	42	2/25/2010	7234	437.20	263.33		1904929.22
	43	06-08-2012	2117	205.70	117.11	435466.90	247921.87
	44	11-10-2012	171	154.06	90.93	26344.26	15549.03
	45	11/18/2015	5930	109.28	35.84	648030.40	212531.20
##	46	4/29/2016	962	205.70	117.11	197883.40	112659.82
##	47	12/31/2016	8867	437.20	263.33		2334947.11
##	48	1/31/2011	273	81.73	56.67	22312.29	15470.91
##	49	11/14/2014	7842	109.28	35.84	856973.76	281057.28
##	50	1/13/2012	1266	651.21	524.96	824431.86	664599.36
	51	3/18/2010	2269	109.28	35.84	247956.32	81320.96
##	52	9/18/2013	9606	9.33	6.92	89623.98	66473.52
##	53	3/28/2013	4063	205.70	117.11	835759.10	475817.93
	54	01-07-2012	3457	651.21	524.96		1814786.72
##	55	10/24/2013	7637	9.33	6.92	71253.21	52848.04
##	56	6/27/2012	3482	109.28	35.84	380512.96	124794.88
	57	08-01-2010	9905	109.28	35.84	1082418.40	354995.20
##	58	03-02-2015	2847	437.20	263.33	1244708.40	749700.51
##	59	2/14/2012	282	668.27	502.54	188452.14	141716.28
	60	4/19/2014	7215	437.20	263.33		1899925.95
	61	07-02-2013	682	205.70	117.11	140287.40	79869.02
	62	07-01-2013	4750	255.28	159.42	1212580.00	757245.00
	63	11/15/2011	5518	651.21	524.96	3593376.78	2896729.28
	64	11/17/2010	6116	109.28	35.84	668356.48	219197.44
	65	11/16/2013	1705	437.20	263.33	745426.00	448977.65
	66	11/25/2013	4477	437.20	263.33	1957344.40	1178928.41
	67	07-09-2012	8656	81.73	56.67	707454.88	490535.52
##	68	09-07-2016	5498	109.28	35.84	600821.44	197048.32
##	69	11/17/2010	8287	651.21	524.96	5396577.27	4350343.52
##	70	5/28/2015	7342	109.28	35.84	802333.76	263137.28
##	71	5/20/2013	5010	651.21	524.96	3262562.10	2630049.60
##	72	9/30/2015	673	9.33	6.92	6279.09	4657.16
##	73	7/15/2011	5741	47.45	31.79	272410.45	182506.39
##	74	6/17/2017	8656	205.70	117.11	1780539.20	1013704.16
##		8/16/2013	9892	437.20	263.33		2604860.36
##	76	12-12-2014	6954	668.27	502.54	4647149.58	3494663.16
##	77	11/15/2014	9379	47.45	31.79	445033.55	
##	78	10/23/2011	3732	154.06	90.93	574951.92	
##		06-02-2012	8614	255.28	159.42		1373243.88
##	80	08-07-2013	9654	437.20	263.33		2542187.82
##	81	11/30/2012	4513	668.27	502.54	3015902.51	2267963.02
##	82	10-08-2012	7884	109.28	35.84	861563.52	
##	83	12-08-2016	6489	437.20	263.33	2836990.80	1708748.37
##	84	01-05-2011	4085	152.58	97.44	623289.30	
##	85	04-07-2012	6457	154.06	90.93	994765.42	
##	86	3/20/2012	6422	81.73	56.67	524870.06	
##	87	1/21/2011	8829	47.45	31.79	418936.05	
##	88	3/20/2014	5559	255.28	159.42	1419101.52	886215.78
	89	5/18/2012	522	9.33	6.92	4870.26	
##		11/25/2016	4660	47.45	31.79	221117.00	
##	91	12/14/2016	948	651.21	524.96	617347.08	497662.08
##	92	07-11-2014	9389	47.45	31.79	445508.05	298476.31

##	0.2	7/04/0010	2021	GE1 01	E04 06	1316095.41 1060944.16
	93 94	7/24/2012	2021	651.21	524.96	3458252.00 2082940.30
##		12/25/2010 3/21/2011	7910 8156	437.20 47.45	263.33 31.79	387002.20 259279.24
##		09-03-2011	888	109.28	35.84	97040.64 31825.92
	90 97	12/28/2011	6267	9.33	6.92	58471.11 43367.64
	98	6/29/2016	1485	154.06	90.93	228779.10 135031.05
	99	08-08-2015				471336.91 326815.89
	100	2/15/2012	5767	81.73 668.27	56.67	3586605.09 2697132.18
##	100	Total.Profit	5367	000.21	502.54	3566605.09 2697132.16
##	1	951410.50				
## ##		248406.36 224598.75				
##		19525.82				
##		639077.50				
##		285087.64				
##		693911.51				
##		510216.66				
##		152114.20				
##		584073.87				
##		7828.12				
	12	306097.92				
	13	606834.72				
	14	1487261.02				
##		122819.06				
##		122865.12				
	17	1208744.24				
##		85033.80				
##		634745.90				
##		337937.60				
##		714157.00				
##		122029.78				
##	23	122686.50				
##	24	5270.67				
##	25	127054.20				
##	26	315574.05				
##	27	13009.18				
##	28	14031.02				
##	29	80241.84				
##	30	392780.10				
##	31	1505888.07				
##	32	53252.50				
##	33	369155.00				
##	34	1367272.50				
##	35	404010.78				
##	36	160609.54				
##	37	9119.44				
##		272672.40				
##	39	846885.00				
##	40	503358.75				
##	41	75555.90				
##		1257775.58				
##		187545.03				
##		10795.23				
##	45	435499.20				

```
## 46
           85223.58
## 47
         1541705.29
## 48
            6841.38
## 49
          575916.48
## 50
          159832.50
## 51
          166635.36
## 52
           23150.46
          359941.17
## 53
## 54
          436446.25
## 55
           18405.17
## 56
          255718.08
          727423.20
## 57
## 58
          495007.89
## 59
           46735.86
## 60
         1254472.05
## 61
           60418.38
## 62
          455335.00
## 63
          696647.50
## 64
          449159.04
## 65
          296448.35
## 66
          778415.99
## 67
          216919.36
          403773.12
## 68
## 69
         1046233.75
## 70
          539196.48
## 71
          632512.50
## 72
             1621.93
## 73
           89904.06
## 74
          766835.04
         1719922.04
## 75
## 76
         1152486.42
## 77
          146875.14
## 78
          235601.16
## 79
          825738.04
## 80
         1678540.98
## 81
          747939.49
## 82
          579000.96
## 83
         1128242.43
## 84
          225246.90
          407630.41
## 85
## 86
          160935.32
## 87
          138262.14
## 88
          532885.74
## 89
             1258.02
## 90
           72975.60
## 91
          119685.00
## 92
          147031.74
## 93
          255151.25
         1375311.70
## 94
## 95
          127722.96
## 96
           65214.72
## 97
           15103.47
## 98
           93748.05
## 99
          144521.02
```

summary(Assign) # discriptive data

```
##
                        Country
                                          Item.Type
                                                            Sales.Channel
      Region
##
   Length: 100
                      Length: 100
                                         Length:100
                                                            Length: 100
                      Class : character
   Class :character
                                         Class : character
                                                            Class : character
   Mode : character
                      Mode :character
                                         Mode :character
                                                            Mode : character
##
##
##
##
   Order.Priority
                       Order.Date
                                            Order.ID
                                                              Ship.Date
   Length: 100
                      Length:100
                                         Min.
                                                :114606559
                                                             Length: 100
##
  Class :character
                      Class :character
                                         1st Qu.:338922488
                                                             Class : character
   Mode :character
                      Mode :character
                                         Median :557708561
                                                             Mode :character
##
                                                :555020412
                                         Mean
##
                                         3rd Qu.:790755081
##
                                         Max.
                                                :994022214
                    Unit.Price
##
     Units.Sold
                                     Unit.Cost
                                                    Total.Revenue
##
   Min. : 124
                  Min. : 9.33
                                         : 6.92
                                                    Min. :
                                   Min.
##
   1st Qu.:2836
                  1st Qu.: 81.73
                                   1st Qu.: 35.84
                                                    1st Qu.: 268721
  Median:5382
                  Median :179.88
                                   Median :107.28
                                                    Median: 752314
## Mean
         :5129
                  Mean :276.76
                                   Mean
                                         :191.05
                                                    Mean
                                                          :1373488
## 3rd Qu.:7369
                  3rd Qu.:437.20
                                   3rd Qu.:263.33
                                                    3rd Qu.:2212045
## Max.
          :9925
                  Max.
                         :668.27
                                   Max.
                                         :524.96
                                                    Max. :5997055
     Total.Cost
                      Total.Profit
##
## Min. :
              3612 Min. : 1258
                     1st Qu.: 121444
## 1st Qu.: 168868
## Median : 363566
                    Median: 290768
## Mean : 931806
                     Mean : 441682
## 3rd Qu.:1613870
                     3rd Qu.: 635829
## Max.
          :4509794
                     Max.
                            :1719922
summary(Assign$Unit.Cost) #discriptive column cost
##
     Min. 1st Qu. Median
                             Mean 3rd Qu.
##
            35.84 107.28
                          191.05 263.33 524.96
summary(Assign$Units.Sold)
##
     Min. 1st Qu.
                   Median
                             Mean 3rd Qu.
                                             Max.
##
             2836
                     5382
                             5129
                                     7369
                                             9925
Ftable <- table(Assign$Item.Type)</pre>
Ftable
##
        Baby Food
##
                                           Cereal
                                                          Clothes
                                                                        Cosmetics
                        Beverages
##
                7
                                8
                                                               13
##
           Fruits
                        Household
                                             Meat Office Supplies
                                                                    Personal Care
##
               10
                                                2
                                                               12
                                                                               10
##
           Snacks
                       Vegetables
##
                3
                                6
```

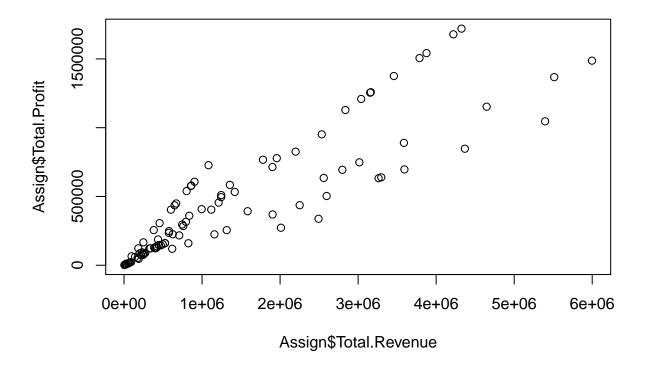
summary(Assign\$Total.Revenue)

```
## Min. 1st Qu. Median Mean 3rd Qu. Max.
## 4870 268721 752314 1373488 2212045 5997055
```

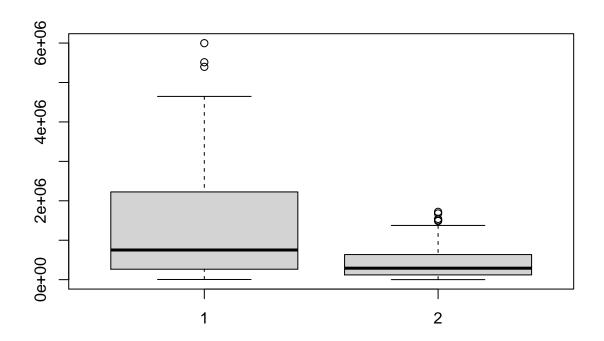
summary(log2(Assign\$Total.Revenue))

```
## Min. 1st Qu. Median Mean 3rd Qu. Max.
## 12.25 18.04 19.52 19.25 21.08 22.52
```

plot(Assign\$Total.Revenue, Assign\$Total.Profit)



boxplot(Assign\$Total.Revenue, Assign\$Total.Profit)



barplot(Assign\$Total.Revenue, Assign\$Total.Profit)

