

Assignment 1

Group 8

2024-02-11

R Markdown

We are hired as a Data Analyst to perform an analysis based on historical data. The key objective is to perform data analysis using R Programming.

This is the data set

```
Life.Expectancy.Data <- read.csv("C:/Users/Turjo/OneDrive/Desktop/TRINA STUDY/Third Semester/4066 Analy
```

Q1. Print the structure of your dataset

```
str(Life.Expectancy.Data)
```

```
## 'data.frame': 2938 obs. of 22 variables:
## $ Country : chr "Afghanistan" "Afghanistan" "Afghanistan" "Afghanistan" ...
## $ Year : int 2015 2014 2013 2012 2011 2010 2009 2008 2007 2006 ...
## $ Status : chr "Developing" "Developing" "Developing" "Developing" ...
## $ Life.expectancy : num 65 59.9 59.9 59.5 59.2 58.8 58.6 58.1 57.5 57.3 ...
## $ Adult.Mortality : int 263 271 268 272 275 279 281 287 295 295 ...
## $ infant.deaths : int 62 64 66 69 71 74 77 80 82 84 ...
## $ Alcohol : num 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.03 0.02 0.03 ...
## $ percentage.expenditure : num 71.3 73.5 73.2 78.2 7.1 ...
## $ Hepatitis.B : int 65 62 64 67 68 66 63 64 63 64 ...
## $ Measles : int 1154 492 430 2787 3013 1989 2861 1599 1141 1990 ...
## $ BMI : num 19.1 18.6 18.1 17.6 17.2 16.7 16.2 15.7 15.2 14.7 ...
## $ under.five.deaths : int 83 86 89 93 97 102 106 110 113 116 ...
## $ Polio : int 6 58 62 67 68 66 63 64 63 58 ...
## $ Total.expenditure : num 8.16 8.18 8.13 8.52 7.87 9.2 9.42 8.33 6.73 7.43 ...
## $ Diphtheria : int 65 62 64 67 68 66 63 64 63 58 ...
## $ HIV.AIDS : num 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 ...
## $ GDP : num 584.3 612.7 631.7 670 63.5 ...
## $ Population : num 33736494 327582 31731688 3696958 2978599 ...
## $ thinness..1.19.years : num 17.2 17.5 17.7 17.9 18.2 18.4 18.6 18.8 19 19.2 ...
## $ thinness.5.9.years : num 17.3 17.5 17.7 18 18.2 18.4 18.7 18.9 19.1 19.3 ...
## $ Income.composition.of.resources : num 0.479 0.476 0.47 0.463 0.454 0.448 0.434 0.433 0.415 0.405 ...
## $ Schooling : num 10.1 10 9.9 9.8 9.5 9.2 8.9 8.7 8.4 8.1 ...
```

Q2. List the variables in your dataset

```
names(Life.Expectancy.Data)
```

```
## [1] "Country" "Year"
## [3] "Status" "Life.expectancy"
## [5] "Adult.Mortality" "infant.deaths"
## [7] "Alcohol" "percentage.expenditure"
## [9] "Hepatitis.B" "Measles"
## [11] "BMI" "under.five.deaths"
## [13] "Polio" "Total.expenditure"
## [15] "Diphtheria" "HIV.AIDS"
## [17] "GDP" "Population"
## [19] "thinness..1.19.years" "thinness.5.9.years"
## [21] "Income.composition.of.resources" "Schooling"
```

Q3. Print the top 15 rows of your dataset

```
head(Life.Expectancy.Data, n = 15)
```

```
##      Country Year      Status Life.expectancy Adult.Mortality infant.deaths
## 1  Afghanistan 2015 Developing           65.0             263           62
## 2  Afghanistan 2014 Developing           59.9             271           64
## 3  Afghanistan 2013 Developing           59.9             268           66
## 4  Afghanistan 2012 Developing           59.5             272           69
## 5  Afghanistan 2011 Developing           59.2             275           71
## 6  Afghanistan 2010 Developing           58.8             279           74
## 7  Afghanistan 2009 Developing           58.6             281           77
## 8  Afghanistan 2008 Developing           58.1             287           80
## 9  Afghanistan 2007 Developing           57.5             295           82
## 10 Afghanistan 2006 Developing           57.3             295           84
## 11 Afghanistan 2005 Developing           57.3             291           85
## 12 Afghanistan 2004 Developing           57.0             293           87
## 13 Afghanistan 2003 Developing           56.7             295           87
## 14 Afghanistan 2002 Developing           56.2              3           88
## 15 Afghanistan 2001 Developing           55.3             316           88
##      Alcohol percentage.expenditure Hepatitis.B Measles BMI under.five.deaths
## 1      0.01              71.279624           65    1154 19.1           83
## 2      0.01              73.523582           62     492 18.6           86
## 3      0.01              73.219243           64     430 18.1           89
## 4      0.01              78.184215           67    2787 17.6           93
## 5      0.01              7.097109           68    3013 17.2           97
## 6      0.01              79.679367           66    1989 16.7          102
## 7      0.01              56.762217           63    2861 16.2          106
## 8      0.03              25.873925           64    1599 15.7          110
## 9      0.02              10.910156           63    1141 15.2          113
## 10     0.03              17.171518           64    1990 14.7          116
## 11     0.02              1.388648           66    1296 14.2          118
## 12     0.02              15.296066           67     466 13.8          120
## 13     0.01              11.089053           65     798 13.4          122
## 14     0.01              16.887351           64    2486 13.0          122
## 15     0.01              10.574728           63    8762 12.6          122
##      Polio Total.expenditure Diphtheria HIV.AIDS      GDP Population
## 1      6              8.16           65      0.1 584.25921 33736494
```

```
## 2      58      8.18      62      0.1 612.69651      327582
## 3      62      8.13      64      0.1 631.74498      31731688
## 4      67      8.52      67      0.1 669.95900      3696958
## 5      68      7.87      68      0.1 63.53723      2978599
## 6      66      9.20      66      0.1 553.32894      2883167
## 7      63      9.42      63      0.1 445.89330      284331
## 8      64      8.33      64      0.1 373.36112      2729431
## 9      63      6.73      63      0.1 369.83580      26616792
## 10     58      7.43      58      0.1 272.56377      2589345
## 11     58      8.70      58      0.1 25.29413      257798
## 12      5      8.79      5      0.1 219.14135      24118979
## 13     41      8.82      41      0.1 198.72854      2364851
## 14     36      7.76      36      0.1 187.84595      21979923
## 15     35      7.80      33      0.1 117.49698      2966463
##      thinness..1.19.years thinness.5.9.years Income.composition.of.resources
## 1      17.2      17.3      0.479
## 2      17.5      17.5      0.476
## 3      17.7      17.7      0.470
## 4      17.9      18.0      0.463
## 5      18.2      18.2      0.454
## 6      18.4      18.4      0.448
## 7      18.6      18.7      0.434
## 8      18.8      18.9      0.433
## 9      19.0      19.1      0.415
## 10     19.2      19.3      0.405
## 11     19.3      19.5      0.396
## 12     19.5      19.7      0.381
## 13     19.7      19.9      0.373
## 14     19.9      2.2      0.341
## 15      2.1      2.4      0.340
##      Schooling
## 1      10.1
## 2      10.0
## 3      9.9
## 4      9.8
## 5      9.5
## 6      9.2
## 7      8.9
## 8      8.7
## 9      8.4
## 10     8.1
## 11     7.9
## 12     6.8
## 13     6.5
## 14     6.2
## 15     5.9
```

Q4. Write a user defined function using any of the variables from the data set.

```
cube_alcohol = function(alcohol){alcohol^3}
cube_alcohol(Life.Expectancy.Data$Alcohol)
```

```
##      [1]      0.000001      0.000001      0.000001      0.000001      0.000001      0.000001
```

##	[7]	0.000001	0.000027	0.000008	0.000027	0.000008	0.000008
##	[13]	0.000001	0.000001	0.000001	0.000001	97.336000	91.733851
##	[19]	107.850176	135.796744	154.854153	147.197952	194.104539	176.558481
##	[25]	173.741112	149.721291	137.388096	93.576664	78.953589	51.895117
##	[31]	76.765625	49.027896	NA	0.000001	0.148877	0.287496
##	[37]	0.175616	0.091125	0.125000	0.097336	0.085184	0.046656
##	[43]	0.125000	0.091125	0.039304	0.046656	0.012167	0.015625
##	[49]	NA	578.009537	531.441000	559.476224	523.606616	474.552000
##	[55]	344.472101	353.393243	256.047875	199.176704	128.024064	43.986977
##	[61]	42.508549	22.425768	17.173512	6.331625	NA	627.222016
##	[67]	631.628712	547.343432	481.890304	481.890304	478.211768	565.609283
##	[73]	644.972544	712.121957	541.343375	385.828352	367.061696	374.805361
##	[79]	423.564751	384.240583	NA	498.677257	567.663552	582.182875
##	[85]	533.411731	541.343375	578.009537	594.823321	543.338496	465.484375
##	[91]	426.957777	444.194947	442.450728	476.379541	467.288576	452.984832
##	[97]	NA	59.776471	54.439939	58.863869	68.417929	75.686967
##	[103]	62.099136	62.099136	63.521199	64.481201	76.765625	55.306341
##	[109]	27.818127	23.393656	23.393656	24.389000	NA	915.498611
##	[115]	961.504803	1009.027027	1092.727000	1164.252608	1197.770328	1245.766976
##	[121]	1177.583616	1095.912791	1092.727000	952.763904	991.026973	952.763904
##	[127]	865.523177	1051.871913	NA	1869.959168	1651.400568	1842.771176
##	[133]	1745.337664	1771.561000	1442.897000	1728.000000	1953.125000	1906.624000
##	[139]	1906.624000	1771.561000	1815.848000	1953.125000	1906.624000	2299.968000
##	[145]	NA	0.000001	9.800344	0.000001	7.762392	7.762392
##	[151]	9.261000	1.643032	1.061208	0.614125	0.389017	0.238328
##	[157]	0.166375	0.166375	0.132651	0.274625	NA	843.908625
##	[163]	835.896888	857.375000	814.780504	776.151559	801.765089	1045.678375
##	[169]	1242.296875	1356.572043	1154.320649	1030.301000	1218.186432	1277.289125
##	[175]	1577.098944	1793.613375	NA	3.869893	4.492125	4.913000
##	[181]	4.574296	7.189057	7.414875	8.000000	8.000000	9.261000
##	[187]	8.615125	10.077696	10.077696	7.880599	7.414875	9.938375
##	[193]	NA	0.000001	0.000001	0.000001	0.000001	0.000001
##	[199]	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001
##	[205]	0.000001	0.000001	0.000001	0.000001	NA	686.128968
##	[211]	667.627624	638.277381	616.295051	594.823321	605.495736	716.917375
##	[217]	607.645423	590.589719	513.922401	452.984832	447.697125	437.245479
##	[223]	401.947272	410.172407	NA	2708.870984	3150.662696	4370.722875
##	[229]	5186.700891	3010.936384	2797.260929	3157.114563	2875.403448	2000.376000
##	[235]	1334.633301	1749.690125	1393.668613	1829.276567	1238.833224	2186.875592
##	[241]	NA	2000.376000	1630.532233	1024.192512	1033.364331	1067.462648
##	[247]	1015.075125	1147.730823	1076.890625	1323.753192	1847.284083	1749.690125
##	[253]	1435.249152	1439.069689	1334.633301	1408.694561	NA	284.890312
##	[259]	282.300416	295.408296	292.754944	308.915776	321.419125	376.367048
##	[265]	379.503424	272.097792	244.140625	238.328000	182.284263	124.251499
##	[271]	117.649000	109.902239	NA	0.000001	0.000001	0.000001
##	[277]	2.744000	2.352637	1.560896	2.097152	1.404928	1.685159
##	[283]	1.442897	1.520875	2.460375	1.860867	2.146689	2.406104
##	[289]	NA	0.000001	0.000001	0.000001	0.012167	0.021952
##	[295]	0.004913	0.009261	0.004096	0.024389	0.389017	0.884736
##	[301]	0.140608	0.024389	0.002744	0.004913	NA	47.437928
##	[307]	54.010152	58.863869	60.698457	61.629875	57.960603	53.582633
##	[313]	41.781923	33.698267	23.393656	18.821096	13.312053	11.543176
##	[319]	10.648000	12.487168	NA	65.450827	69.934528	97.972181
##	[325]	99.897344	93.576664	107.171875	135.005697	137.388096	111.980168

##	[331]	94.818816	76.765625	70.957944	56.623104	57.066625	48.228544
##	[337]	NA	0.000001	0.000001	0.000001	191.102976	214.921799
##	[343]	125.751501	282.300416	239.483061	268.336125	258.474853	117.649000
##	[349]	167.284151	263.374721	164.566592	154.854153	NA	392.223168
##	[355]	379.503424	430.368875	435.519512	425.259008	393.832837	374.805361
##	[361]	371.694959	357.911000	338.608873	321.419125	335.702375	343.000000
##	[367]	362.467097	382.657176	NA	0.000001	0.000001	0.000001
##	[373]	0.912673	0.681472	0.015625	0.300763	0.614125	0.300763
##	[379]	0.004096	0.001331	0.001728	0.002197	0.103823	0.050653
##	[385]	NA	1740.992427	1754.049816	1327.373299	1214.767763	1259.712000
##	[391]	1305.751357	1323.753192	1291.467969	1121.622319	1151.022592	1316.532736
##	[397]	1401.168159	1061.208000	1231.925248	909.853209	NA	0.000001
##	[403]	99.897344	107.171875	91.733851	94.196375	94.196375	91.125000
##	[409]	96.071912	105.823817	116.214272	93.576664	96.071912	92.959677
##	[415]	94.818816	51.064811	NA	0.000001	0.000001	0.000001
##	[421]	71.991296	71.991296	66.430125	81.182737	93.576664	91.125000
##	[427]	170.031464	187.149248	199.176704	213.847192	225.866529	288.804781
##	[433]	NA	0.000001	31.255875	34.012224	30.664297	31.255875
##	[439]	24.897088	19.465109	17.173512	18.609625	30.080231	29.218112
##	[445]	30.371328	30.664297	31.255875	41.063625	NA	0.000001
##	[451]	0.000001	0.000001	130.323843	107.171875	88.121125	71.991296
##	[457]	147.197952	76.765625	77.308776	73.560059	71.991296	55.742968
##	[463]	55.306341	42.508549	NA	0.000001	0.000001	0.000001
##	[469]	9.528128	10.648000	9.663597	11.239424	8.998912	8.365427
##	[475]	7.880599	2.628072	2.985984	2.924207	5.000211	3.442951
##	[481]	NA	0.000001	0.000001	0.000001	237.176659	232.608375
##	[487]	204.336469	205.379000	160.989184	142.236648	127.263527	104.487111
##	[493]	99.897344	96.071912	86.938307	59.776471	NA	531.441000
##	[499]	551.368000	571.787000	551.368000	592.704000	592.704000	571.787000
##	[505]	571.787000	551.368000	512.000000	474.552000	456.533000	456.533000
##	[511]	438.976000	438.976000	NA	0.000001	0.000001	0.000001
##	[517]	4.574296	4.657463	3.796416	3.511808	3.375000	3.652264
##	[523]	3.375000	3.375000	3.307949	3.176523	3.511808	3.442951
##	[529]	NA	0.000001	0.262144	0.238328	0.175616	0.125000
##	[535]	0.103823	0.091125	0.074088	0.068921	0.074088	0.039304
##	[541]	0.074088	0.046656	0.027000	0.015625	NA	367.061696
##	[547]	373.248000	308.915776	382.657176	498.677257	451.217663	390.617891
##	[553]	403.583419	393.832837	433.798093	252.435968	258.474853	222.545016
##	[559]	226.981000	242.970624	NA	193.100552	194.104539	189.119224
##	[565]	178.453547	190.109375	116.214272	77.854483	58.411072	35.287552
##	[571]	24.897088	28.094464	25.934336	24.642171	22.906304	28.652616
##	[577]	NA	84.027672	85.766121	87.528384	83.453453	78.402752
##	[583]	81.746504	88.121125	101.194696	92.959677	84.027672	77.308776
##	[589]	76.765625	88.121125	86.938307	101.194696	NA	0.000001
##	[595]	0.000001	0.000001	0.001728	0.003375	0.004913	0.001728
##	[601]	0.004096	0.015625	0.013824	0.019683	0.017576	0.000512
##	[607]	0.000512	0.000729	NA	0.000001	0.000001	0.000001
##	[613]	55.742968	43.986977	41.781923	17.173512	20.796875	11.390625
##	[619]	8.365427	17.173512	14.706125	16.581375	12.167000	11.543176
##	[625]	0.000001	NA	41.063625	40.001688	37.259704	39.651821
##	[631]	45.882712	67.419143	75.151448	74.088000	71.473375	68.921000
##	[637]	68.417929	65.939264	72.511713	78.953589	81.746504	NA
##	[643]	1789.188344	1902.014919	1516.910949	1811.386459	1771.561000	1820.316861
##	[649]	1754.049816	1981.385216	1655.595487	1556.862679	2253.243231	2616.662152

##	[655]	2400.721219	2273.930875	2062.933417	NA	83.453453	73.034632
##	[661]	71.991296	70.957944	70.444997	64.481201	77.308776	70.444997
##	[667]	72.511713	89.915392	84.027672	84.604519	68.921000	65.939264
##	[673]	60.236288	NA	0.000001	738.763264	1174.241375	1221.611509
##	[679]	1450.571968	1259.712000	1732.323601	1544.804416	1509.003523	1485.446221
##	[685]	2212.245127	1197.770328	1593.413632	1048.772096	873.722816	NA
##	[691]	2038.720832	1929.781125	2053.225511	1920.495907	2043.548109	2315.685267
##	[697]	2326.203125	2422.300607	2212.245127	2294.744759	2320.940224	2202.073901
##	[703]	2444.008923	2384.621056	2310.438248	NA	0.000001	37.595375
##	[709]	47.045881	38.958219	30.371328	37.595375	31.554496	30.664297
##	[715]	35.287552	33.076161	30.664297	30.664297	29.218112	16.194277
##	[721]	43.614208	NA	0.000001	0.000001	0.000001	6.028568
##	[727]	5.929741	9.663597	9.129329	3.511808	3.581577	2.924207
##	[733]	2.985984	6.128487	6.331625	6.859000	7.762392	NA
##	[739]	895.841344	857.375000	794.022776	1147.730823	1086.373952	1024.192512
##	[745]	1225.043000	1327.373299	1338.273208	1435.249152	1431.435383	1536.800264
##	[751]	1458.274104	1544.804416	1597.509809	NA	0.054872	0.148877
##	[757]	0.140608	0.059319	0.085184	0.117649	0.117649	0.091125
##	[763]	1.061208	1.860867	1.643032	1.061208	1.092727	0.857375
##	[769]	2.406104	0.000001	NA	207.474688	208.527857	208.527857
##	[775]	206.425071	218.167208	221.445125	229.220928	221.445125	238.328000
##	[781]	186.169411	137.388096	252.435968	265.847707	230.346397	284.890312
##	[787]	NA	55.742968	53.582633	60.236288	63.521199	61.629875
##	[793]	57.960603	53.157376	47.832147	43.614208	44.361864	48.627125
##	[799]	50.243409	58.411072	70.444997	63.521199	NA	0.009261
##	[805]	0.009261	0.012167	0.010648	0.010648	0.009261	0.013824
##	[811]	0.009261	0.005832	0.004096	0.004096	0.003375	0.003375
##	[817]	0.002744	0.002744	NA	16.003008	14.172488	15.252992
##	[823]	13.312053	13.144256	16.581375	19.248832	22.665187	21.253933
##	[829]	21.253933	24.389000	29.791000	26.198073	23.887872	21.717639
##	[835]	NA	0.000001	1231.925248	1680.914269	1327.373299	979.146657
##	[841]	506.261573	580.093704	322.828856	385.828352	371.694959	247.673152
##	[847]	362.467097	217.081801	130.323843	88.716536	NA	0.000001
##	[853]	0.000001	0.000001	0.238328	0.226981	0.250047	0.117649
##	[859]	1.860867	0.912673	1.225043	0.262144	0.175616	0.571787
##	[865]	0.226981	0.571787	NA	0.000001	0.000001	0.000001
##	[871]	0.000001	3354.790473	3402.072064	4904.335099	5706.550403	4557.782312
##	[877]	3738.308608	3422.470843	1577.098944	1512.953792	0.000001	0.000001
##	[883]	NA	0.000001	6.434856	6.229504	2.299968	2.406104
##	[889]	1.601613	1.442897	1.191016	1.815848	0.970299	0.636056
##	[895]	0.493039	0.512000	0.614125	0.681472	NA	0.000001
##	[901]	0.000001	0.000001	0.000001	11.390625	12.326391	7.414875
##	[907]	9.129329	8.741816	8.242408	4.330747	5.451776	6.331625
##	[913]	7.189057	8.615125	NA	681.472000	721.734273	788.889024
##	[919]	944.076141	918.330048	988.047936	1080.045576	1141.166125	1045.678375
##	[925]	985.074875	967.361669	806.954491	791.453125	714.516984	633.839779
##	[931]	NA	1520.875000	1367.631000	1520.875000	1643.032000	1601.613000
##	[937]	1643.032000	1685.159000	1815.848000	1906.624000	1815.848000	2289.529432
##	[943]	2454.911549	2616.662152	2679.826869	2532.139147	NA	0.000001
##	[949]	695.506456	571.787000	704.969000	693.154125	644.972544	669.921875
##	[955]	733.870808	513.922401	460.099648	537.367797	270.840023	580.093704
##	[961]	801.765089	697.864103	NA	0.000001	0.000001	0.000001
##	[967]	39.651821	42.144192	26.730899	21.717639	18.399744	25.153757
##	[973]	11.543176	15.813251	15.069223	8.998912	11.390625	10.360232

##	[979]	NA	230.346397	206.425071	458.314011	539.353144	379.503424
##	[985]	295.408296	368.601813	647.214625	236.029032	103.823000	52.313624
##	[991]	37.933056	20.123648	21.024576	35.287552	NA	1341.919727
##	[997]	1309.338584	1397.415032	1404.928000	1404.928000	1412.467848	1466.003456
##	[1003]	1520.875000	1626.379776	1589.324463	1655.595487	1693.669888	1838.265625
##	[1009]	1934.434936	2151.685171	NA	0.000001	0.000001	0.000001
##	[1015]	4.410944	4.826809	5.451776	5.639752	1.953125	4.913000
##	[1021]	3.375000	3.112136	3.581577	4.096000	3.307949	4.096000
##	[1027]	NA	426.957777	415.160936	551.368000	515.849608	729.000000
##	[1033]	748.613312	860.085351	904.231063	835.896888	985.074875	873.722816
##	[1039]	846.590536	529.475129	640.503928	609.800192	NA	596.947688
##	[1045]	561.515625	525.557943	481.890304	494.913671	596.947688	709.732288
##	[1051]	743.677416	743.677416	681.472000	599.077107	926.859375	1228.480911
##	[1057]	887.503681	830.584000	NA	6.644672	7.189057	8.242408
##	[1063]	10.077696	9.800344	9.800344	10.793861	13.824000	13.481272
##	[1069]	12.977875	13.824000	14.706125	13.997521	16.194277	18.191447
##	[1075]	NA	0.000001	0.000001	0.000001	0.010648	0.008000
##	[1081]	0.005832	0.009261	0.006859	0.004096	0.009261	0.039304
##	[1087]	0.005832	0.009261	0.004913	0.004913	NA	0.000001
##	[1093]	0.000001	0.000001	45.499293	33.076161	16.581375	18.399744
##	[1099]	26.463592	33.386248	29.791000	17.173512	10.077696	15.069223
##	[1105]	16.581375	22.906304	NA	445.943744	432.081216	433.798093
##	[1111]	432.081216	425.259008	420.189749	392.223168	373.248000	348.913664
##	[1117]	397.065375	481.890304	498.677257	461.889917	302.111711	291.434247
##	[1123]	NA	0.000001	183.250432	183.250432	183.250432	191.102976
##	[1129]	200.201625	210.644875	224.755712	236.029032	172.808693	226.981000
##	[1135]	292.754944	226.981000	240.641848	109.902239	NA	23.639903
##	[1141]	30.080231	30.080231	29.791000	29.791000	29.218112	30.959144
##	[1147]	31.554496	33.698267	33.698267	27.543608	28.094464	29.503629
##	[1153]	20.570824	17.779581	NA	0.000001	1287.913472	1431.435383
##	[1159]	1524.845951	1252.726552	1505.060136	1577.098944	1976.656375	2279.122496
##	[1165]	2166.720184	2342.039552	2320.940224	2347.334289	2289.529432	1824.793048
##	[1171]	NA	413.493625	390.617891	476.379541	537.367797	561.515625
##	[1177]	1067.462648	611.960049	426.957777	373.248000	350.402625	313.046839
##	[1183]	288.804781	288.804781	258.474853	234.885113	NA	28.934443
##	[1189]	30.080231	29.791000	27.000000	21.253933	15.625000	7.189057
##	[1195]	4.019679	2.571353	2.048383	1.728000	1.685159	1.331000
##	[1201]	1.000000	0.804357	NA	0.000729	0.000729	0.000512
##	[1207]	0.000512	0.000512	0.000512	0.000343	0.000216	0.000216
##	[1213]	0.000216	0.000216	0.000125	0.000125	0.000216	0.000216
##	[1219]	NA	0.000001	0.000001	0.000001	0.000027	0.000027
##	[1225]	0.000027	0.000008	0.000008	0.000008	0.000001	0.000001
##	[1231]	0.000001	0.000001	0.000001	0.000001	NA	0.000001
##	[1237]	0.000001	0.000001	0.004913	0.006859	0.008000	0.004913
##	[1243]	0.002744	0.000027	0.005832	0.032768	0.000343	0.003375
##	[1249]	0.004913	0.008000	NA	1242.296875	1154.320649	1516.910949
##	[1255]	1609.840448	1676.676672	1485.446221	2029.089096	2509.911279	2427.715584
##	[1261]	2357.947691	2363.266368	2320.940224	2845.178713	2905.841483	2785.366143
##	[1267]	NA	17.984728	19.465109	21.484952	19.034163	18.191447
##	[1273]	16.581375	15.069223	12.649337	11.089567	13.997521	11.089567
##	[1279]	12.487168	15.069223	16.194277	16.194277	NA	432.081216
##	[1285]	397.065375	420.189749	340.068392	335.702375	381.078125	504.358336
##	[1291]	586.376253	601.211584	647.214625	724.150792	804.357000	791.453125
##	[1297]	909.853209	935.441352	NA	56.181887	54.439939	48.627125

## [1303]	45.882712	44.738875	36.926037	43.243551	48.228544	47.832147
## [1309]	46.268279	49.430863	42.144192	53.157376	58.863869	41.421736
## [1315]	NA	0.000001	430.368875	403.583419	403.583419	328.509000
## [1321]	356.400829	359.425431	387.420489	420.189749	510.082399	456.533000
## [1327]	480.048687	487.443403	517.781627	506.261573	NA	0.068921
## [1333]	0.064000	0.068921	0.079507	0.132651	0.205379	0.226981
## [1339]	0.216000	0.205379	0.166375	0.157464	0.157464	0.157464
## [1345]	0.166375	0.117649	NA	248.858189	272.097792	317.214568
## [1351]	291.434247	318.611987	292.754944	438.976000	411.830784	354.894912
## [1357]	334.255384	281.011375	284.890312	214.921799	190.109375	216.000000
## [1363]	NA	0.000001	6.229504	5.929741	5.832000	5.177717
## [1369]	6.434856	5.000211	7.645373	5.451776	6.028568	2.924207
## [1375]	3.307949	4.574296	4.330747	3.442951	NA	0.000001
## [1381]	0.000001	0.000001	0.148877	0.110592	0.157464	0.097336
## [1387]	0.314432	0.438976	0.216000	0.110592	0.125000	0.117649
## [1393]	0.216000	0.097336	NA	0.000001	0.000001	0.000001
## [1399]	0.000008	0.000001	0.001000	0.000027	0.000027	0.000001
## [1405]	0.000001	0.000008	0.000027	0.000001	0.000001	0.000001
## [1411]	NA	0.000001	0.000001	0.000001	35.287552	20.346417
## [1417]	13.651919	16.194277	21.253933	15.252992	22.188041	39.651821
## [1423]	43.614208	36.264691	17.984728	9.663597	NA	0.000001
## [1429]	0.000001	0.000001	156.590819	210.644875	138.991832	132.651000
## [1435]	125.000000	50.243409	49.836032	43.986977	39.651821	36.926037
## [1441]	30.664297	137.388096	NA	0.000001	1115.157653	1064.332261
## [1447]	1042.590744	941.192000	955.671625	1659.797504	1780.360128	1124.864000
## [1453]	976.191488	683.797841	559.476224	411.830784	298.077632	362.467097
## [1459]	NA	2.299968	2.146689	3.581577	3.869893	3.944312
## [1465]	4.251528	4.657463	5.088448	6.028568	7.301384	9.261000
## [1471]	10.503459	7.762392	10.503459	11.543176	NA	0.000001
## [1477]	0.000001	0.000001	13.651919	19.902511	20.796875	20.796875
## [1483]	19.465109	17.779581	19.034163	5.832000	7.880599	25.672375
## [1489]	23.393656	29.791000	NA	0.000001	0.000001	0.000001
## [1495]	51.478848	48.228544	52.734375	58.411072	65.450827	66.430125
## [1501]	73.560059	76.225024	74.618461	77.854483	85.184000	88.716536
## [1507]	NA	0.000001	0.000001	0.000001	0.000001	0.000001
## [1513]	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001
## [1519]	0.000001	0.000001	0.000001	0.000001	NA	3504.881359
## [1525]	3402.072064	3470.384744	2029.089096	2146.689000	1906.624000	2352.637000
## [1531]	2406.104000	2048.383000	1860.867000	1771.561000	1439.069689	1331.000000
## [1537]	1061.208000	961.504803	NA	1375.036928	1338.273208	1458.274104
## [1543]	1520.875000	1466.003456	1489.355288	1532.808577	1622.234375	1719.374392
## [1549]	1659.797504	1915.864488	2005.142581	2151.685171	2141.700569	2268.747144
## [1555]	NA	0.000001	0.658503	0.658503	0.912673	1.092727
## [1561]	0.753571	0.314432	0.357911	0.314432	0.373248	0.531441
## [1567]	0.804357	0.729000	1.157625	1.560896	NA	0.000001
## [1573]	0.000001	0.000001	1.860867	1.259712	1.560896	2.048383
## [1579]	1.643032	1.643032	1.124864	1.367631	1.259712	1.331000
## [1585]	1.520875	1.643032	NA	0.140608	0.148877	0.148877
## [1591]	0.132651	0.117649	0.103823	0.103823	0.079507	0.074088
## [1597]	0.097336	0.117649	0.110592	0.117649	0.148877	0.157464
## [1603]	NA	0.000001	0.000001	0.000001	7.077888	6.128487
## [1609]	4.019679	5.451776	5.639752	4.251528	3.176523	4.096000
## [1615]	5.359375	7.414875	7.762392	6.128487	NA	0.000001
## [1621]	0.000001	0.000001	0.226981	0.216000	0.205379	0.185193

## [1627]	0.166375	0.148877	0.166375	0.117649	0.157464	0.148877
## [1633]	0.132651	0.103823	NA	611.960049	631.628712	451.217663
## [1639]	329.939371	494.913671	401.947272	363.994344	413.493625	690.807104
## [1645]	263.374721	278.445077	300.763000	188.132517	177.504328	174.676879
## [1651]	0.000001	NA	0.000001	0.000001	0.000001	0.000001
## [1657]	0.000001	0.000001	0.000008	0.000008	0.000001	0.000001
## [1663]	0.000001	0.000001	0.000008	0.000001	0.000027	NA
## [1669]	0.000001	0.000001	0.000001	27.818127	25.672375	22.665187
## [1675]	15.438249	34.012224	51.895117	61.162984	71.991296	67.917312
## [1681]	70.957944	84.027672	97.336000	NA	145.531576	143.055667
## [1687]	148.035889	148.877000	141.420761	146.363183	153.990656	153.130375
## [1693]	133.432831	119.823157	117.649000	116.214272	108.531333	114.791256
## [1699]	124.251499	NA	3.944312	4.657463	26.463592	6.751269
## [1705]	5.451776	8.741816	7.645373	4.410944	5.177717	6.859000
## [1711]	8.242408	31.255875	21.484952	22.425768	11.089567	0.000001
## [1717]	NA	0.000001	0.000001	0.000001	0.000001	195.112000
## [1723]	97.972181	77.308776	54.439939	24.642171	20.796875	5.359375
## [1729]	2.248091	14.348907	23.639903	21.717639	NA	0.000001
## [1735]	0.000001	0.000001	282.300416	282.300416	268.336125	234.885113
## [1741]	123.505992	155.720872	NA	0.000001	0.000001	0.000001
## [1747]	0.000001	0.000001	NA	0.079507	0.091125	0.166375
## [1753]	0.157464	0.175616	0.238328	0.132651	0.175616	0.195112
## [1759]	0.103823	0.175616	0.195112	0.097336	0.097336	0.091125
## [1765]	NA	0.000001	1.560896	1.685159	0.830584	0.884736
## [1771]	1.643032	3.241792	1.092727	1.728000	1.860867	3.652264
## [1777]	4.741632	10.077696	9.129329	1.481544	NA	0.000001
## [1783]	0.343000	0.166375	0.035937	0.027000	0.021952	0.027000
## [1789]	0.017576	0.021952	0.021952	0.085184	0.064000	0.068921
## [1795]	0.054872	0.042875	NA	0.000001	0.000001	0.000001
## [1801]	481.890304	435.519512	510.082399	247.673152	134.217728	120.553784
## [1807]	116.930169	110.592000	147.197952	131.872229	131.872229	188.132517
## [1813]	0.000001	NA	0.000001	0.019683	0.017576	0.019683
## [1819]	0.013824	0.010648	0.009261	0.008000	0.008000	0.008000
## [1825]	0.009261	0.008000	0.006859	0.000729	0.000512	NA
## [1831]	0.000001	653.972032	741.217625	719.323136	812.166237	786.330467
## [1837]	890.277128	865.523177	938.313739	909.853209	873.722816	873.722816
## [1843]	907.039232	985.074875	1018.108216	658.503000	746.142643	773.620632
## [1849]	778.688000	849.278123	890.277128	788.889024	854.670349	776.151559
## [1855]	814.780504	806.954491	766.060875	707.347971	761.048497	669.921875
## [1861]	707.347971	NA	44.738875	45.882712	47.832147	38.958219
## [1867]	38.614472	37.933056	48.228544	56.181887	50.243409	50.653000
## [1873]	55.306341	53.582633	42.875000	43.243551	47.045881	NA
## [1879]	0.000001	0.000001	0.000001	0.003375	0.001728	0.001331
## [1885]	0.001728	0.001000	0.001331	0.001331	0.001331	0.001000
## [1891]	0.001000	0.001331	0.001000	NA	0.000001	571.787000
## [1897]	622.835864	669.921875	704.969000	741.217625	804.357000	870.983875
## [1903]	901.428696	915.498611	929.714176	926.859375	887.503681	879.217912
## [1909]	786.330467	0.000001	212.776173	222.545016	239.483061	239.483061
## [1915]	278.445077	286.191179	298.077632	307.546875	287.496000	270.840023
## [1921]	258.474853	240.641848	220.348864	204.336469	165.469149	182.284263
## [1927]	NA	0.064000	0.097336	0.132651	0.157464	0.175616
## [1933]	0.175616	0.185193	0.185193	0.195112	0.250047	0.226981
## [1939]	0.175616	0.157464	0.166375	0.054872	NA	0.000001
## [1945]	0.000064	0.000064	0.000064	0.000064	0.000027	0.000027

## [1951]	0.000027	0.000027	0.000064	0.000001	0.000001	0.000001
## [1957]	0.000001	0.000008	NA	NA	306.182024	327.082769
## [1963]	335.702375	328.509000	334.255384	324.242703	306.182024	233.744896
## [1969]	187.149248	169.112377	184.220009	168.196608	168.196608	160.103007
## [1975]	173.741112	NA	0.000001	0.000001	0.000001	0.681472
## [1981]	0.493039	0.551368	0.531441	0.357911	0.262144	0.592704
## [1987]	0.195112	0.205379	0.226981	0.314432	0.389017	NA
## [1993]	0.000001	127.263527	153.990656	194.104539	180.362125	156.590819
## [1999]	231.475544	176.558481	176.558481	259.694072	238.328000	292.754944
## [2005]	181.321496	295.408296	311.665752	NA	0.000001	155.720872
## [2011]	135.796744	112.678587	105.154048	103.161709	114.084125	78.953589
## [2017]	75.151448	87.528384	77.854483	91.125000	65.450827	75.151448
## [2023]	96.702579	NA	92.345408	97.972181	126.506008	122.023936
## [2029]	114.084125	86.350888	74.618461	73.560059	67.917312	75.151448
## [2035]	88.121125	87.528384	86.350888	93.576664	105.823817	NA
## [2041]	1228.480911	1573.037747	1263.214441	1305.751357	1187.648379	1225.043000
## [2047]	1481.544000	1295.029000	1124.864000	857.375000	776.151559	743.677416
## [2053]	515.849608	463.684824	592.704000	NA	964.430272	1000.000000
## [2059]	1710.777536	1693.669888	1838.265625	1740.992427	1883.652875	1986.121593
## [2065]	2253.243231	2368.593037	2433.138625	2869.341461	1728.000000	1824.793048
## [2071]	1680.914269	NA	1.520875	1.728000	1.442897	1.560896
## [2077]	1.560896	1.367631	2.571353	1.906624	2.097152	1.643032
## [2083]	1.367631	1.000000	0.658503	0.438976	0.125000	NA
## [2089]	0.000001	812.166237	873.722816	814.780504	786.330467	721.734273
## [2095]	806.954491	741.217625	688.465387	736.314327	773.620632	901.428696
## [2101]	870.983875	1501.123625	1102.302937	NA	997.002999	1154.320649
## [2107]	1218.186432	843.908625	561.515625	603.351125	746.142643	901.428696
## [2113]	584.277056	1252.726552	1847.284083	541.343375	302.111711	1323.753192
## [2119]	967.361669	NA	0.000001	881.974079	879.217912	753.571000
## [2125]	729.000000	1124.864000	1685.159000	1191.016000	616.295051	452.984832
## [2131]	946.966168	676.836152	890.277128	935.441352	1048.772096	NA
## [2137]	1036.433728	1184.287112	1327.373299	1345.572864	1349.232625	1408.694561
## [2143]	1745.337664	1811.386459	1638.858339	1548.816893	1520.875000	1450.571968
## [2149]	1284.365503	1147.730823	1054.977832	NA	0.000001	0.000001
## [2155]	0.000001	580.093704	496.793088	359.425431	260.917119	311.665752
## [2161]	325.660672	344.472101	307.546875	295.408296	478.211768	187.149248
## [2167]	362.467097	622.835864	NA	991.026973	921.167317	997.002999
## [2173]	1134.626507	1284.365503	1363.938029	1767.172329	2038.720832	2433.138625
## [2179]	1869.959168	1697.936057	1976.656375	1664.006625	1740.992427	1597.509809
## [2185]	NA	344.472101	353.393243	332.812557	345.948408	343.000000
## [2191]	321.419125	331.373888	204.336469	208.527857	220.348864	159.220088
## [2197]	132.651000	120.553784	105.823817	110.592000	NA	0.000001
## [2203]	0.000001	0.000001	9.938375	27.270901	23.887872	62.570773
## [2209]	57.066625	43.614208	47.832147	47.437928	72.511713	35.937000
## [2215]	40.353607	27.000000	0.000001	NA	0.000001	0.000001
## [2221]	0.000001	184.220009	173.741112	70.444997	82.881856	70.957944
## [2227]	162.771336	146.363183	193.100552	279.726264	195.112000	126.506008
## [2233]	130.323843	NA	0.000729	0.000729	0.000729	0.000729
## [2239]	0.000729	0.000729	0.000729	0.001000	0.000512	0.000125
## [2245]	0.000216	0.000125	0.000125	0.000125	0.000125	NA
## [2251]	0.017576	0.017576	0.021952	0.032768	0.021952	0.027000
## [2257]	0.021952	0.032768	0.039304	0.035937	0.042875	0.035937
## [2263]	0.046656	0.039304	0.024389	NA	751.089429	768.575296
## [2269]	825.293672	873.722816	898.632125	955.671625	868.250664	804.357000

##	[2275]	631.628712	884.736000	408.518488	381.078125	335.702375	426.957777
##	[2281]	401.947272	NA	0.000001	0.000001	0.000001	918.330048
##	[2287]	275.894451	120.553784	253.636137	535.387328	535.387328	478.211768
##	[2293]	494.913671	406.869021	1386.195875	303.464448	559.476224	NA
##	[2299]	0.000001	0.000001	0.000001	54.010152	56.623104	62.570773
##	[2305]	59.776471	57.512456	54.872000	56.181887	63.521199	67.419143
##	[2311]	66.923416	74.618461	62.570773	5.735339	6.128487	6.128487
##	[2317]	6.751269	5.832000	6.229504	5.177717	4.913000	4.096000
##	[2323]	3.723875	3.307949	3.048625	2.924207	10.077696	8.998912
##	[2329]	8.365427	NA	1191.016000	967.361669	1036.433728	1073.741824
##	[2335]	1039.509197	1201.157047	1469.878353	1184.287112	1086.373952	1263.214441
##	[2341]	1009.027027	955.671625	1252.726552	1235.376017	1352.899016	NA
##	[2347]	1144.445336	865.523177	1312.932375	1194.389981	1099.104768	1164.252608
##	[2353]	1309.338584	1338.273208	1842.771176	1382.469544	1000.000000	1552.836312
##	[2359]	801.765089	1259.712000	1685.159000	NA	0.000001	0.000001
##	[2365]	0.000001	0.970299	1.331000	1.771561	1.295029	0.614125
##	[2371]	0.970299	0.729000	1.643032	1.643032	1.259712	0.343000
##	[2377]	0.357911	NA	0.000001	0.000001	0.000001	0.000001
##	[2383]	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001
##	[2389]	0.000001	0.000001	0.000001	0.000001	0.000001	NA
##	[2395]	401.947272	395.446904	401.947272	401.947272	385.828352	438.976000
##	[2401]	549.353259	609.800192	614.125000	656.234909	337.153536	332.812557
##	[2407]	348.913664	401.947272	389.017000	NA	NA	NA
##	[2413]	NA	NA	NA	NA	NA	NA
##	[2419]	NA	NA	NA	NA	NA	NA
##	[2425]	NA	NA	0.000001	791.453125	817.400375	890.277128
##	[2431]	935.441352	997.002999	1073.741824	1349.232625	1668.222856	1693.669888
##	[2437]	1710.777536	1767.172329	1842.771176	958.585256	1375.036928	NA
##	[2443]	13.312053	16.777216	21.952000	27.818127	12.326391	8.615125
##	[2449]	9.261000	12.008989	7.529536	7.645373	3.796416	4.826809
##	[2455]	4.251528	4.741632	3.048625	NA	0.000001	0.000001
##	[2461]	0.000001	9.528128	5.545233	7.880599	8.120601	8.120601
##	[2467]	6.859000	3.723875	4.019679	5.268024	4.019679	5.929741
##	[2473]	5.451776	NA	252.435968	218.167208	188.132517	179.406144
##	[2479]	145.531576	135.005697	120.553784	105.154048	92.345408	89.314623
##	[2485]	94.196375	92.959677	85.766121	75.686967	78.953589	NA
##	[2491]	0.000001	0.000001	0.000001	140.608000	119.823157	117.649000
##	[2497]	115.501303	170.953875	169.112377	131.096512	193.100552	180.362125
##	[2503]	168.196608	303.464448	371.694959	NA	389.017000	389.017000
##	[2509]	405.224000	405.224000	373.248000	389.017000	328.509000	328.509000
##	[2515]	274.625000	274.625000	287.496000	328.509000	328.509000	287.496000
##	[2521]	238.328000	NA	887.503681	921.167317	958.585256	997.002999
##	[2527]	1003.003001	1045.678375	1089.547389	1137.893184	1073.741824	1045.678375
##	[2533]	1174.241375	1266.723368	1277.289125	1375.036928	1427.628376	NA
##	[2539]	0.000001	0.000001	0.000001	0.438976	0.474552	0.531441
##	[2545]	0.512000	0.571787	0.912673	0.778688	0.804357	2.146689
##	[2551]	1.953125	2.146689	2.803221	NA	0.000001	0.000001
##	[2557]	0.000001	0.032768	0.032768	0.027000	0.032768	0.042875
##	[2563]	0.054872	0.050653	0.054872	0.046656	0.216000	0.636056
##	[2569]	0.050653	NA	263.374721	274.625000	282.300416	223.648543
##	[2575]	210.644875	203.297472	207.474688	238.328000	236.029032	245.314376
##	[2581]	234.885113	231.475544	208.527857	207.474688	203.297472	NA
##	[2587]	1.442897	1.092727	1.860867	1.560896	3.176523	5.545233
##	[2593]	5.088448	5.359375	5.268024	5.359375	8.869743	13.824000

## [2599]	16.194277	34.965783	23.393656	NA	0.000001	0.000001
## [2605]	0.000001	0.125000	0.001000	0.000729	0.000216	0.000125
## [2611]	0.000064	0.046656	0.054872	0.085184	0.110592	0.125000
## [2617]	0.125000	NA	0.000001	0.000001	0.000001	2.985984
## [2623]	1.771561	1.906624	2.352637	2.571353	2.571353	1.481544
## [2629]	1.030301	1.061208	1.000000	0.857375	1.331000	NA
## [2635]	0.000001	0.000001	0.000001	0.884736	1.906624	1.259712
## [2641]	1.331000	8.615125	5.735339	3.869893	5.832000	5.735339
## [2647]	3.442951	2.460375	1.906624	NA	334.255384	302.111711
## [2653]	300.763000	274.625000	274.625000	258.474853	263.374721	258.474853
## [2659]	256.047875	229.220928	197.137368	169.112377	134.217728	94.196375
## [2665]	102.503232	NA	2.685619	2.146689	2.197000	2.146689
## [2671]	2.097152	2.744000	2.571353	1.906624	3.112136	2.571353
## [2677]	2.515456	2.406104	1.601613	1.685159	1.771561	NA
## [2683]	3.048625	2.803221	3.652264	3.581577	3.307949	2.744000
## [2689]	2.685619	2.000376	2.146689	2.146689	2.460375	2.863288
## [2695]	3.176523	3.307949	3.652264	NA	24.389000	25.153757
## [2701]	20.796875	16.581375	15.252992	12.977875	13.824000	17.173512
## [2707]	19.902511	23.149125	23.393656	23.887872	12.649337	12.977875
## [2713]	24.389000	0.000001	NA	0.000001	0.000001	0.000001
## [2719]	1067.462648	1009.027027	893.056347	938.313739	898.632125	944.076141
## [2725]	1027.243729	967.361669	1048.772096	1131.366088	1180.932193	1147.730823
## [2731]	NA	523.606616	601.211584	601.211584	609.800192	590.589719
## [2737]	660.776311	846.590536	695.506456	510.082399	390.617891	313.046839
## [2743]	207.474688	116.930169	80.062991	90.518849	NA	6.967871
## [2749]	6.028568	5.359375	5.177717	4.826809	5.177717	6.434856
## [2755]	4.826809	5.268024	5.735339	5.545233	5.268024	5.088448
## [2761]	4.657463	4.410944	1211.355496	1115.157653	1099.104768	1131.366088
## [2767]	1218.186432	1287.913472	1256.216039	1509.003523	1659.797504	1564.936281
## [2773]	1749.690125	1824.793048	1664.006625	1497.193984	1298.596571	1187.648379
## [2779]	NA	0.000001	74.088000	63.044792	65.939264	73.560059
## [2785]	62.570773	40.707584	85.184000	67.419143	61.162984	55.306341
## [2791]	12.812904	38.272753	68.417929	58.863869	NA	686.128968
## [2797]	686.128968	686.128968	651.714363	625.026375	660.776311	667.627624
## [2803]	667.627624	642.735647	618.470208	609.800192	592.704000	578.009537
## [2809]	561.515625	553.387661	NA	219.256227	197.137368	192.100033
## [2815]	212.776173	239.483061	296.740963	308.915776	296.740963	284.890312
## [2821]	256.047875	181.321496	133.432831	201.230056	272.097792	294.079625
## [2827]	NA	0.000001	0.000001	0.000001	22.665187	20.346417
## [2833]	16.777216	13.144256	9.938375	7.529536	5.639752	4.019679
## [2839]	3.652264	3.176523	3.581577	4.096000	NA	0.000001
## [2845]	0.000001	0.000001	0.614125	0.753571	0.571787	1.643032
## [2851]	1.030301	1.000000	0.681472	0.614125	1.728000	1.906624
## [2857]	0.753571	1.771561	NA	270.840023	302.111711	300.763000
## [2863]	306.182024	376.367048	437.245479	547.343432	658.503000	565.609283
## [2869]	496.793088	430.368875	250.047000	327.082769	521.660125	513.922401
## [2875]	NA	68.417929	64.000000	69.934528	61.162984	60.698457
## [2881]	57.512456	45.882712	27.270901	16.777216	19.683000	23.393656
## [2887]	10.503459	8.365427	6.229504	4.096000	NA	0.000001
## [2893]	0.000064	0.000064	0.000064	0.000216	0.000027	0.000064
## [2899]	0.000125	0.000064	0.000064	0.000216	0.000064	0.000343
## [2905]	0.000512	0.000343	NA	0.000001	13.997521	17.373979
## [2911]	16.974593	15.069223	12.167000	9.528128	8.998912	11.390625
## [2917]	12.649337	14.886936	12.649337	14.526784	17.779581	17.984728

```
## [2923]      NA  274.625000  260.917119  225.866529  216.000000  141.420761
## [2929]  99.897344  45.118016  58.411072  95.443993  70.957944  82.881856
## [2935]  66.923416  86.938307  5.088448  4.741632
```

Q5. Use data manipulation techniques and filter rows based on any logical criteria that exist in your dataset.

```
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
## v dplyr      1.1.4      v readr      2.1.5
## v forcats    1.0.0      v stringr   1.5.1
## v ggplot2    3.4.4      v tibble    3.2.1
## v lubridate  1.9.3      v tidyr     1.3.1
## v purrr      1.0.2
```

```
## -- Conflicts ----- tidyverse_conflicts() --
```

```
## x dplyr::filter() masks stats::filter()
```

```
## x dplyr::lag()     masks stats::lag()
```

```
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
countryBD = as.data.frame(Life.Expectancy.Data %>% filter(Life.Expectancy.Data$Country == "Bangladesh"))
view(countryBD)
```

Q6. Identify the dependent & independent variables and use reshaping techniques and create a new data frame by joining those variables from your dataset.

```
Newtable1 = cbind(Life.Expectancy.Data$Country, Life.Expectancy.Data$Status, Life.Expectancy.Data$Life.
view(Newtable1)
```

```
Newtable3 = cbind(Life.Expectancy.Data$Country, Life.Expectancy.Data$infant.deaths, Life.Expectancy.Data
view(Newtable3)
```

```
Totaltable = merge(Newtable1, Newtable3, by = "V1")
view(Totaltable)
```

Q7. Remove missing values in your dataset.

```
Life.Expectancy.Data = as.data.frame(na.omit(Life.Expectancy.Data))
```

Q8. Identify and remove duplicated data in your dataset

```
lifex = as.data.frame(Life.Expectancy.Data %>% distinct(GDP, .keep_all = TRUE) )
```

Q9. Reorder multiple rows in descending order

```
lifex2 = as.data.frame(Life.Expectancy.Data %>% arrange( desc(Year)))
```

Q10. Rename some of the column names in your dataset

```
names(Life.Expectancy.Data)[4] = "Life Expectancy"
names(Life.Expectancy.Data)[5] = "Adult Mortality"
names(Life.Expectancy.Data)[6] = "Infant Deaths"
```

Q11. Add new variables in your data frame by using a mathematical function (for e.g. – multiply an existing column by 2 and add it as a new variable to your data frame)

```
Life.Expectancy.Data = as.data.frame(Life.Expectancy.Data %>% mutate( Double.Schooling = Life.Expectancy.
```

Q12. Create a training set using random number generator engine.

```
lifex3 = cbind(Life.Expectancy.Data$Country, Life.Expectancy.Data$Year, Life.Expectancy.Data$Status, Li
lifex3 = as.data.frame(lifex3)
set.seed(1234)
lifex3 = as.data.frame(lifex3 %>% sample_frac(0.8, replace = FALSE) )
view(lifex3)
```

Q13. Print the summary statistics of your dataset

```
summary(Life.Expectancy.Data)
```

```
##      Country      Year      Status      Life Expectancy
## Length:1649      Min.    :2000      Length:1649      Min.    :44.0
## Class :character  1st Qu.:2005      Class :character  1st Qu.:64.4
## Mode  :character  Median :2008      Mode  :character  Median :71.7
##                               Mean  :2008      Mean  :69.3
##                               3rd Qu.:2011      3rd Qu.:75.0
##                               Max.   :2015      Max.   :89.0
## Adult Mortality Infant Deaths      Alcohol      percentage.expenditure
## Min.   : 1.0      Min.   : 0.00      Min.   : 0.010      Min.   : 0.00
## 1st Qu.: 77.0      1st Qu.: 1.00      1st Qu.: 0.810      1st Qu.: 37.44
## Median :148.0      Median : 3.00      Median : 3.790      Median : 145.10
## Mean   :168.2      Mean   : 32.55      Mean   : 4.533      Mean   : 698.97
## 3rd Qu.:227.0      3rd Qu.: 22.00      3rd Qu.: 7.340      3rd Qu.: 509.39
## Max.   :723.0      Max.   :1600.00      Max.   :17.870      Max.   :18961.35
## Hepatitis.B      Measles      BMI      under.five.deaths
## Min.   : 2.00      Min.   : 0      Min.   : 2.00      Min.   : 0.00
## 1st Qu.:74.00      1st Qu.: 0      1st Qu.:19.50      1st Qu.: 1.00
## Median :89.00      Median : 15      Median :43.70      Median : 4.00
## Mean   :79.22      Mean   : 2224      Mean   :38.13      Mean   : 44.22
## 3rd Qu.:96.00      3rd Qu.: 373      3rd Qu.:55.80      3rd Qu.: 29.00
## Max.   :99.00      Max.   :131441      Max.   :77.10      Max.   :2100.00
## Polio      Total.expenditure      Diphtheria      HIV.AIDS
## Min.   : 3.00      Min.   : 0.740      Min.   : 2.00      Min.   : 0.100
## 1st Qu.:81.00      1st Qu.: 4.410      1st Qu.:82.00      1st Qu.: 0.100
## Median :93.00      Median : 5.840      Median :92.00      Median : 0.100
## Mean   :83.56      Mean   : 5.956      Mean   :84.16      Mean   : 1.984
## 3rd Qu.:97.00      3rd Qu.: 7.470      3rd Qu.:97.00      3rd Qu.: 0.700
## Max.   :99.00      Max.   :14.390      Max.   :99.00      Max.   :50.600
## GDP      Population      thinness..1.19.years
## Min.   : 1.68      Min.   :3.400e+01      Min.   : 0.100
## 1st Qu.: 462.15      1st Qu.:1.919e+05      1st Qu.: 1.600
## Median : 1592.57      Median :1.420e+06      Median : 3.000
## Mean   : 5566.03      Mean   :1.465e+07      Mean   : 4.851
## 3rd Qu.: 4718.51      3rd Qu.:7.659e+06      3rd Qu.: 7.100
## Max.   :119172.74      Max.   :1.294e+09      Max.   :27.200
## thinness.5.9.years      Income.composition.of.resources      Schooling
## Min.   : 0.100      Min.   :0.0000      Min.   : 4.20
## 1st Qu.: 1.700      1st Qu.:0.5090      1st Qu.:10.30
```

```
## Median : 3.200      Median :0.6730      Median :12.30
## Mean   : 4.908      Mean    :0.6316      Mean    :12.12
## 3rd Qu.: 7.100      3rd Qu.:0.7510      3rd Qu.:14.00
## Max.   :28.200      Max.    :0.9360      Max.    :20.70
## Double.Schooling
## Min.    : 8.40
## 1st Qu.:20.60
## Median  :24.60
## Mean    :24.24
## 3rd Qu.:28.00
## Max.    :41.40
```

Q14. Use any of the numerical variables from the dataset and perform the following statistical functions
Mean

```
mean(Life.Expectancy.Data$`Life Expectancy`)
```

```
## [1] 69.3023
```

Median

```
median(Life.Expectancy.Data$`Life Expectancy`)
```

```
## [1] 71.7
```

Mode

```
mode(Life.Expectancy.Data$`Life Expectancy`)
```

```
## [1] "numeric"
```

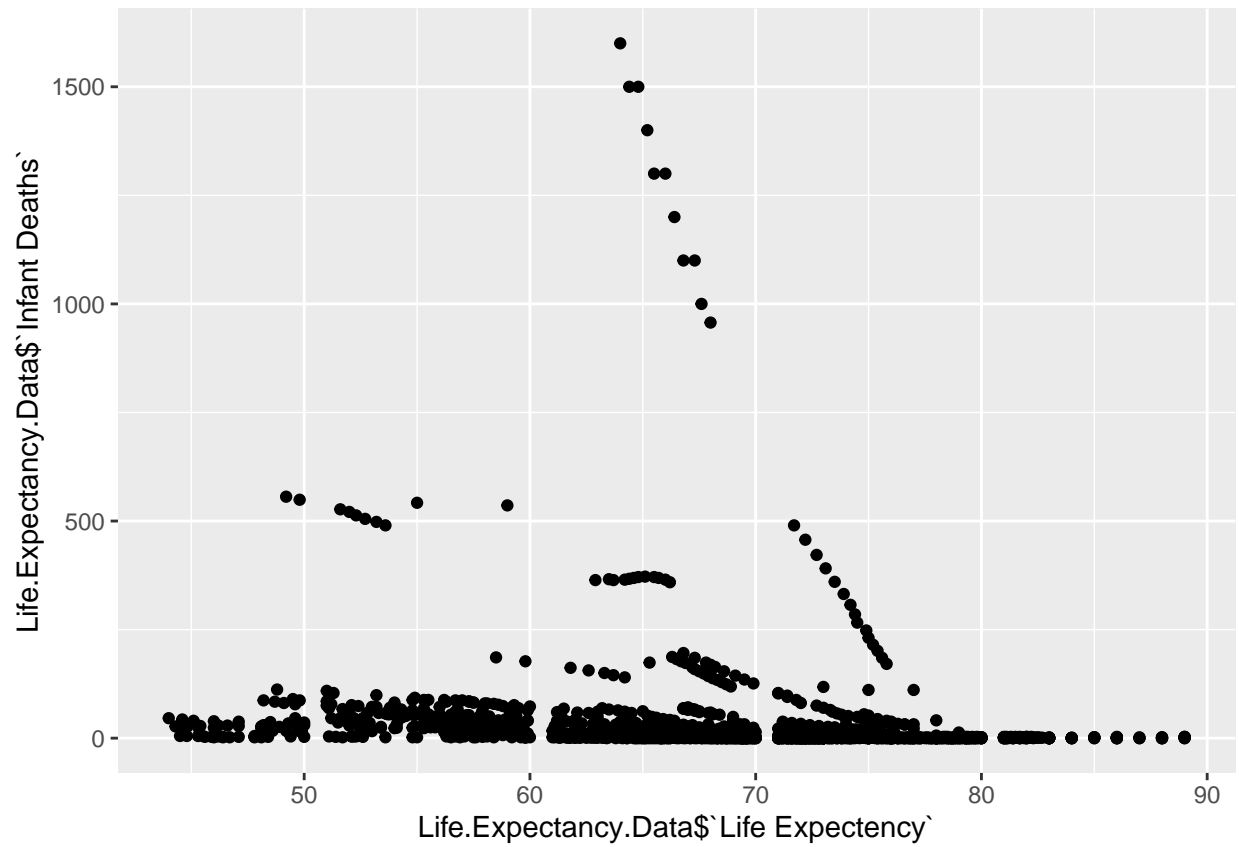
Range

```
range(Life.Expectancy.Data$`Life Expectancy`)
```

```
## [1] 44 89
```

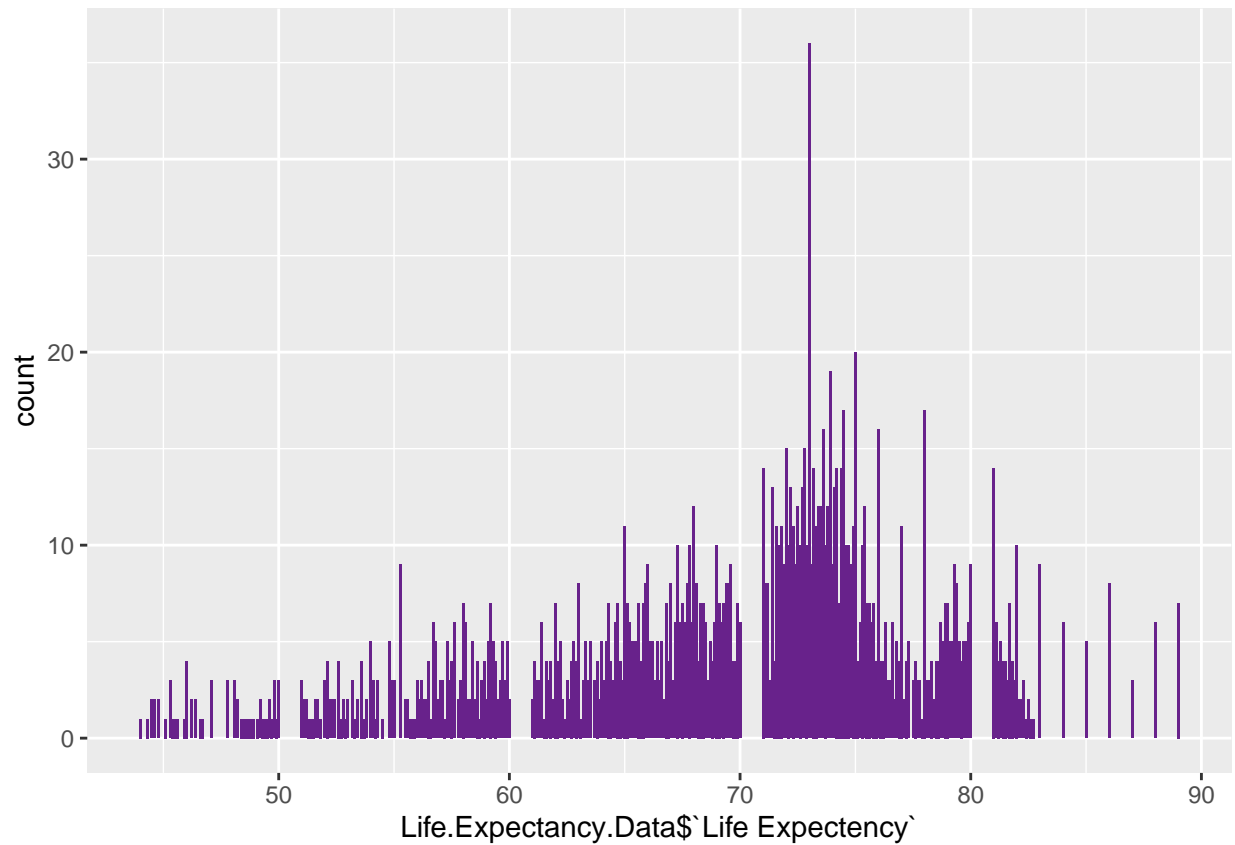
Q15. Plot a scatter plot for any 2 variables in your dataset

```
ggplot(data = Life.Expectancy.Data, aes( x = Life.Expectancy.Data$`Life Expectancy`, y = Life.Expectancy`
```



Q16. Plot a bar plot for any 2 variables in your dataset

```
ggplot(Life.Expectancy.Data, aes(x = Life.Expectancy.Data$`Life Expectancy`))+ geom_bar(fill = "darkcoral")
```

Q17. Find the correlation between any 2 variables by applying least square linear regression mode

```
lifeexCorr = cor(Life.Expectancy.Data$percentage.expenditure, Life.Expectancy.Data$GDP, method = "pearson")
lifeexCorr
```

```
## [1] 0.9592989
```

Link to GIT Repository

<https://github.com/AnikaTrina/Trina>