

Profiling internet users

APRIL 22

Information Security Privacy Dist Sys

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Objective

Profiling internet users project main goal is to check if the usage of each user which we were given 54 users are statistically distinguishable (i.e., $p \text{ value} \leq 0.5$) or indistinguishable (i.e., $p \text{ value} > 0.5$) when comparing to each other. This analysis has been done by selecting 3-time windows and comparing each to come up with how it plays a big role in profiling.

Technical details

I have developed my project using dev c++, in c++ language. Below include how I developed this project

- 1) Excel data: converted xlsx to csv
- 2) Database: convert data tables into objects; also known as dataset

Analysis

Hence, we had to decide if the internet usage of each subject is indistinct contrast with their internet usage over a period of time. Hence, we had to find P value of the 3-time window [10 seconds, 227 seconds, and minutes] for week 1 and week 2, where one

Analyzing: Each excel file it was for a one-time window;

Time taken to execute code: 4824 seconds = 1.34 hours

227 seconds: **Distinguishable** are: 980 **Indistinguishable** are: 1936

[illegible]

300 seconds: **Distinguishable** are: 935 **Indistinguishable** are: 1981

Time to execute the code: 138.9 seconds = 0.017 minutes

[illegible]

Therefore, we can see that the time window for 10 seconds is the best in terms of authentication as the number of users who are indistinguishable are lesser in comparison to the rest of the time window times. Although, 10 second produce lesser number of indistinguishable it is execution time was higher than the rest.

Hence, we can see that the p values are presented in the diagonal of the table, that is because r2a2a (week 2 user 2 vs week 2 user 2) is always 1 because having the difference between their ranks would be 0, due to this, the value of z will be divided by 0, hence I used to get a 'nan' value when we try and calculate p value, but then I changed the 1 value to 0.99 and everything was fixed.

Executing code

I used c++ language to complete this project. Each 54 user profile peruse in one sitting to analyze against each user. First, download all the files attached from the zip which has a total of 57 files; 54 of for user excel files which I converted it to csv for easy read using c++ using getline and the rest 3 related to code and object files. Second, open the file main.cpp and in line 41 put the directory in which the csv file and the codes are all in the same file in order to run the codes and be able to open the files; otherwise the

files wont open. In line 77 you can change the times window (10sec, 227sec, and 300sec).

Note: to run the file of code, I have changed 2 values in files: *mmg9n6* row 138900 to 0 and *tjdpzd* row 106255 to 0 because it was crashing my program when I was trying to run.

In line 41 I used a vector size, so it can dynamically be changed, and we can have as many files in the directory. To read each file, I opened a for loop and had some operations on the data. Since, the file take is in .csv it is separated by a comma. This makes it easy to collect data of columns: Doctets, first packets and duration into vectors, while the rest are temp's meaning they are skipped.

Data in first packet are converted to human readable form using epoch where we can get data in the form of "Mon Feb 04 20:01:52 2013":

```
const char *d = FirstPacket[i].c_str();
std::stringstream is(d);
is >> epoch64;
epoch64 /= 1000;
time_t t = epoch64;
char *epo;
char delims[] = " ,:";
char * tok;
epo = ctime(&t);
tok = strtok(epo, delims);
```

After that, we tokenized each data to store in its vector of Day, month, date, hours, min, seconds and year. To calculate octets/durations we use data in vector doctets and durations and store in vector od. When the duration is 0 it would result in an error hence they are marked with a -1 in order to skip them in the upcoming calculations.

To calculate the total number of seconds for every record from excel we do that by multiplying hours with 24, minutes with 60 and then we add them to the seconds.

```
totime.push_back(3600 * stoi(Hrs[x]) + 60 * stoi(Min[x]) + stoi(Sec[x]));
```

Then we divide with the length of the slot which I did to categorize them into groups of specific days.

```
group.push_back(totime[x]/slot);
```

Matrix with columns as group of the day and row numbers as dates of the month, where every excel sheet we can get the date value and group value being calculated first then adding its values of doctets/durations to the value doctets/durations being present before with date as row and group as y value. Hence, doing so, excel sheet is getting added to each row that is made that is then be used to get overall average value.

File matrix having files as rows with all groups of every day except Sunday and Saturday as columns, it also starts with the first Monday 2013-02-04. Ranks is available to every group with a value of average doctets/durations in a specific day.

To calculate Spearman's correlation coefficient, the r value is calculated using the difference between the respective ranks to get 3 correlations: r1a2a, r1a2b, r2ab2, where letter represent subject and number represent week. To get Z value, we use the 3-correlation using the formula below

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}$$

$$Z = [Z_{1a2a} - Z_{1a2b}] * \frac{\sqrt{[N - 3]}}{2 * [1 - r_{2a2b}] * h}$$

$$Z_{1a2a} = \frac{1}{2} \log \frac{1 + r_{1a2a}}{1 - r_{1a2a}}$$

$$Z_{1a2b} = \frac{1}{2} \log \frac{1 + r_{1a2b}}{1 - r_{1a2b}}$$

$$h = \frac{1 - [f * rm^2]}{1 - rm^2}$$

$$f = \frac{1 - r_{2a2b}}{2 * [1 - rm^2]}$$

$$rm^2 = \frac{r_{1a2a}^2 + r_{1a2b}^2}{2}$$

To calculate P of these z values we used the function below

```
static double PFunction(double z)
{
    double p = 0.3275911;
    double a1 = 0.254829592;
    double a2 = -0.284496736;
    double a3 = 1.421413741;
    double a4 = -1.453152027;
    double a5 = 1.061405429;

    int sign;
    if (z < 0.0)
        sign = -1;
    else
        sign = 1;

    double x = Math.Abs(z) / Math.Sqrt(2.0);
    double t = 1.0 / (1.0 + p * x);
    double erf = 1.0 - (((((a5 * t + a4) * t) + a3)
        * t + a2) * t + a1) * t * Math.Exp(-x * x);
    return 0.5 * (1.0 + sign * erf);
}
```

Therefore, when $p \leq 0.05$: correlation coefficient calculated for internet usage (e.g.; b) is smaller than the known subject (e.g.; a), as subject b will be pointed as subject far from subject a.

On the other hand, when $p > 0.05$: correlation coefficient calculated for internet usage (e.g.; b) is *not significantly* smaller than the known subject (e.g.; a), as subject b will be

pointed as subject fat from subject a, where then subject b will be pointed as indistinguishable from subject a.

Indistinguishable is when p value > 0.05 , when distinguishable is when p value ≤ 0.05

Code output issues

I tried fixing my issues with outputting nan “not a number” whenever the value p falls in the same user, such as when its diagonal. I checked all my codes, and everything seems to be doing the right calculations. Hence, I am not sure what exactly is it doing in between.

10-second interval

[illegible]

```

C:\Users\Araf\Desktop\profiling\intelhex2main.exe
Tue Jul 11, 2017 12:00:00 AM
Month: 11; Year: 2013
day: 28 & number of slot: 7854
min of days are: 28

Final values are:
1a2a value is: 0.91826 1a2b value is: 0.91826 1a2c value is: 0.99 1a2d value is: 0.91826 1a2e value is: 0.91826 1a2f value is: 0.94106 1a2g value is: 0.90663 1a2h value is: 0.91826 1a2i value is: 0.77486 1a2j value is: 0.91826 1a2k value is: 0.91826 1a2l value is: 0.90307 1a2m value is: 0.91826 1a2n value is: 0.91826 1a2o value is: 0.94257 1a2p value is: 0.961347 1a2q value is: 0.91826 1a2r value is: 0.9294
1a2s value is: 0.853093 1a2t value is: 0.91826 1a2u value is: 0.804276 1a2v value is: 0.825654 1a2w value is: 0.91826 1a2x value is: 0.866522 1a2y value is: 0.886544 1a2z value is: 0.91826 1a2aa value is: 0.940215 1a2ab value is: 0.958602 1a2ac value is: 0.91826 1a2ad value is: 0.94032 1a2ae value is: 0.959181 1a2af value is: 0.91826 1a2ag value is: 0.942557 1a2ah value is: 0.961347 1a2ai value is: 0.91826
1a2aj value is: 0.821453 1a2ak value is: 0.889747 1a2al value is: 0.91826 1a2am value is: 0.93116 1a2an value is: 0.81953 1a2ao value is: 0.91826 1a2ap value is: 0.889747 1a2aq value is: 0.889747 1a2ar value is: 0.91826 1a2as value is: 0.908622 1a2at value is: 0.942766 1a2au value is: 0.91826 1a2av value is: 0.91826 1a2aw value is: 0.94257 1a2ax value is: 0.961347 1a2ay value is: 0.91826 1a2az value is: 0.91826 1a2ba value is: 0.91826 1a2bb value is: 0.91826 1a2bc value is: 0.91826 1a2bd value is: 0.91826 1a2be value is: 0.91826 1a2bf value is: 0.91826 1a2bg value is: 0.91826 1a2bh value is: 0.91826 1a2bi value is: 0.91826 1a2bj value is: 0.91826 1a2bk value is: 0.91826 1a2bl value is: 0.91826 1a2bm value is: 0.91826 1a2bn value is: 0.91826 1a2bo value is: 0.91826 1a2bp value is: 0.91826 1a2bq value is: 0.91826 1a2br value is: 0.91826 1a2bs value is: 0.91826 1a2bt value is: 0.91826 1a2bu value is: 0.91826 1a2bv value is: 0.91826 1a2bw value is: 0.91826 1a2bx value is: 0.91826 1a2by value is: 0.91826 1a2bz value is: 0.91826 1a2ca value is: 0.91826 1a2cb value is: 0.91826 1a2cc value is: 0.91826 1a2cd value is: 0.91826 1a2ce value is: 0.91826 1a2cf value is: 0.91826 1a2cg value is: 0.91826 1a2ch value is: 0.91826 1a2ci value is: 0.91826 1a2cj value is: 0.91826 1a2ck value is: 0.91826 1a2cl value is: 0.91826 1a2cm value is: 0.91826 1a2cn value is: 0.91826 1a2co value is: 0.91826 1a2cp value is: 0.91826 1a2cq value is: 0.91826 1a2cr value is: 0.91826 1a2cs value is: 0.91826 1a2ct value is: 0.91826 1a2cu value is: 0.91826 1a2cv value is: 0.91826 1a2cw value is: 0.91826 1a2cx value is: 0.91826 1a2cy value is: 0.91826 1a2cz value is: 0.91826 1a2da value is: 0.91826 1a2db value is: 0.91826 1a2dc value is: 0.91826 1a2dd value is: 0.91826 1a2de value is: 0.91826 1a2df value is: 0.91826 1a2dg value is: 0.91826 1a2dh value is: 0.91826 1a2di value is: 0.91826 1a2dj value is: 0.91826 1a2dk value is: 0.91826 1a2dl value is: 0.91826 1a2dm value is: 0.91826 1a2dn value is: 0.91826 1a2do value is: 0.91826 1a2dp value is: 0.91826 1a2dq value is: 0.91826 1a2dr value is: 0.91826 1a2ds value is: 0.91826 1a2dt value is: 0.91826 1a2du value is: 0.91826 1a2dv value is: 0.91826 1a2dw value is: 0.91826 1a2dx value is: 0.91826 1a2dy value is: 0.91826 1a2dz value is: 0.91826 1a2ea value is: 0.91826 1a2eb value is: 0.91826 1a2ec value is: 0.91826 1a2ed value is: 0.91826 1a2ee value is: 0.91826 1a2ef value is: 0.91826 1a2eg value is: 0.91826 1a2eh value is: 0.91826 1a2ei value is: 0.91826 1a2ej value is: 0.91826 1a2ek value is: 0.91826 1a2el value is: 0.91826 1a2em value is: 0.91826 1a2en value is: 0.91826 1a2eo value is: 0.91826 1a2ep value is: 0.91826 1a2eq value is: 0.91826 1a2er value is: 0.91826 1a2es value is: 0.91826 1a2et value is: 0.91826 1a2eu value is: 0.91826 1a2ev value is: 0.91826 1a2ew value is: 0.91826 1a2ex value is: 0.91826 1a2ey value is: 0.91826 1a2ez value is: 0.91826 1a2fa value is: 0.91826 1a2fb value is: 0.91826 1a2fc value is: 0.91826 1a2fd value is: 0.91826 1a2fe value is: 0.91826 1a2ff value is: 0.91826 1a2fg value is: 0.91826 1a2fh value is: 0.91826 1a2fi value is: 0.91826 1a2fj value is: 0.91826 1a2fk value is: 0.91826 1a2fl value is: 0.91826 1a2fm value is: 0.91826 1a2fn value is: 0.91826 1a2fo value is: 0.91826 1a2fp value is: 0.91826 1a2fq value is: 0.91826 1a2fr value is: 0.91826 1a2fs value is: 0.91826 1a2ft value is: 0.91826 1a2fu value is: 0.91826 1a2fv value is: 0.91826 1a2fw value is: 0.91826 1a2fx value is: 0.91826 1a2fy value is: 0.91826 1a2fz value is: 0.91826 1a2ga value is: 0.91826 1a2gb value is: 0.91826 1a2gc value is: 0.91826 1a2gd value is: 0.91826 1a2ge value is: 0.91826 1a2gf value is: 0.91826 1a2gg value is: 0.91826 1a2gh value is: 0.91826 1a2gi value is: 0.91826 1a2gj value is: 0.91826 1a2gk value is: 0.91826 1a2gl value is: 0.91826 1a2gm value is: 0.91826 1a2gn value is: 0.91826 1a2go value is: 0.91826 1a2gp value is: 0.91826 1a2gq value is: 0.91826 1a2gr value is: 0.91826 1a2gs value is: 0.91826 1a2gt value is: 0.91826 1a2gu value is: 0.91826 1a2gv value is: 0.91826 1a2gw value is: 0.91826 1a2gx value is: 0.91826 1a2gy value is: 0.91826 1a2gz value is: 0.91826 1a2ha value is: 0.91826 1a2hb value is: 0.91826 1a2hc value is: 0.91826 1a2hd value is: 0.91826 1a2he value is: 0.91826 1a2hf value is: 0.91826 1a2hg value is: 0.91826 1a2hh value is: 0.91826 1a2hi value is: 0.91826 1a2hj value is: 0.91826 1a2hk value is: 0.91826 1a2hl value is: 0.91826 1a2hm value is: 0.91826 1a2hn value is: 0.91826 1a2ho value is: 0.91826 1a2hp value is: 0.91826 1a2hq value is: 0.91826 1a2hr value is: 0.91826 1a2hs value is: 0.91826 1a2ht value is: 0.91826 1a2hu value is: 0.91826 1a2hv value is: 0.91826 1a2hw value is: 0.91826 1a2hx value is: 0.91826 1a2hy value is: 0.91826 1a2hz value is: 0.91826 1a2ia value is: 0.91826 1a2ib value is: 0.91826 1a2ic value is: 0.91826 1a2id value is: 0.91826 1a2ie value is: 0.91826 1a2if value is: 0.91826 1a2ig value is: 0.91826 1a2ih value is: 0.91826 1a2ii value is: 0.91826 1a2ij value is: 0.91826 1a2ik value is: 0.91826 1a2il value is: 0.91826 1a2im value is: 0.91826 1a2in value is: 0.91826 1a2io value is: 0.91826 1a2ip value
```


227-second interval

Week 1 & 2	User 1	User 2	User 3	User 4	User 5	User 6	User 7	User 8	User 9	User 10	User 11	User 12	User 13	User 14	User 15	User 16	User 17
User 1	0.5	1.0375E-13	1	1	0	1	1	1	0	0.0811558	0	1	1	1	0.0483217	0	1
User 2	1	0.5	1	1	0	1	0	1	1	0.998648	1	0	1	1	1	0	1
User 3	8.8555E-09	0	0.5	0.915481	0	0.0407433	0.03109794	5.6556E-11	0	0	0.7445157	1.59678E-05	3.91462E-10	2.16077E-06	0	0	0.900248
User 4	0	0	0.98787	0.5	0	1.2108E-06	0.00453214	6.6613E-16	0	0	0.755691	1.13389E-05	1.55431E-14	0	0	0	0.923933
User 5	1	1	1	1	0.5	1	0.5	1	1	1	1	0.5	1	1	1	0.5	1
User 6	0	0	0	0.831183	1.3015E-06	0	0.5	0.831183	1.3015E-06	0	0.907398	0.000465622	4.94049E-15	0	0	0	0
User 7	0.15586	0	1	1	0	1	0.5	1	0	1.62592E-08	0	1	1	1	0.973835	0	1
User 8	0.997903	0	1	1	0	0.999483	1	0.5	0	2.27472E-10	0	1	1	1	0.999255	0	1
User 9	1	0.00038908	1	1	0	1	1	1	0.5	1	0	1	1	1	1	0	1
User 10	1	0	1	1	0	1	1	1	1	0.5	0	1	1	1	1	0	1
User 11	1	1	1	1	0.5	1	1	1	1	1	0.5	1	1	1	1	0.5	1
User 12	0.991579	0.00016228	1	1	2.9548E-06	1	1	0.942319	1.8457E-05	0.0199254	2.95477E-06	0.5	1	0.999988	0.999741	2.95477E-06	1
User 13	0.00099821	0	1	1	0	0.305197	0.362982	7.6615E-05	0	0	0	1	0.5	0.993057	0.0022698	0	0.999986
User 14	5.1585E-08	0	1	1	0	0.999339	0.997578	0.0662141	0	0	0	1	0.999997	0.5	0.34898E-09	0	1
User 15	0.999761	0	1	1	0	1	0	1	1	0	0.566755E-05	0	1	1	1	0.5	0
User 16	1	1	1	1	0.5	1	1	1	1	1	0.5	1	1	1	1	0.5	1
User 17	0.00084846	0	0.999952	0.675933	0	0.0558084	0.567902	3.8017E-11	0	0	0	0.972918	0.00107374	0.964575	5.97304E-07	0	0.5
User 18	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0
User 19	0.00574E-05	0	1	0.999969	0	0.390098	0.0484692	0.0160504	0	0	0	1	0.723192	0.785449	0.676968E-07	0	0.993598
User 20	2.07067E-05	0	0.997841	0.999148	0	0.000122823	0.998188	0.00239958	0	0	0.999991	0.00068316	62.30479	0.00813168	0	0.964238	0
User 21	0.999999	0	1	1	0	1	0	1	1	0	2.1043E-11	0	1	1	1	0	0
User 22	0	0	1	0.998425	0	0.280845	0.00023797	2.0689E-06	0	0	0.943553	0.0416231	8.09813E-05	1.02141E-14	0	0.999994	0
User 23	0	0	0.991534	0.656555	0	1.6613E-05	3.8258E-05	0	0	0	0.997888	0.00931712	1.20471E-08	0	0	0.992368	0
User 24	0.0924678	0	1	1	0	0.999597	0.999078	0.988957	0	0	0	0	1	0.95432	0.810256	0	1
User 25	2.0184E-08	0	0	0.999178	0	0.999178	0.999325	0.00816723	0	0	0	0.999306	0.08313	1.08313E-05	0	0	0.999368
User 26	0.745241	9.5208E-12	1	1	7.605E-15	0.999602	0.996729	0.661005	5.8303E-13	3.07145E-05	7.60503E-15	1	0.99264	0.999916	0.575128	7.60503E-15	1
User 27	0	0	0.268882	0.659087	0	2.1205E-14	4.7238E-11	0	0	0	0	0.791433	7.23854E-12	1.30584E-06	0	0	0.000137243
User 28	3.9084E-05	0	1	1	0	0.999999	0.999086	0.521455	0	0	0	0	1	0.997149	0.0231741	0	1
User 29	0.00042918	0	0.990648	0.999705	0	0.0773031	0.0230927	1.1292E-09	0	0	1	0.0246285	0.379629	1.45581E-05	0	0.999917	0

Select C:\Users\Anfal\Desktop\profilinginternetusers\zzmain.exe

Num of days are: 28

[illegible]

5-minute interval

Week 1 & 2	User 1	User 2	User 3	User 4	User 5	User 6	User 7	User 8	User 9	User 10	User 11	User 12	User 13	User 14	User 15	User 16	User 17
User 1	0.5	1.951E-13	1	1	1.1102E-16	1	1	1	0	0.112883	1.1102E-16	1	1	1	0.00106107	1.1102E-16	1
User 2	1	0.5	1	1	0	1	1	1	0.99993	1	0	1	1	1	1	0	1
User 3	0.00020036	0	0.5	0.932804	0	0.203656	0.151731	1.0956E-06	0	0	0.881977	1.7885E-07	1.0856E-06	0.00127098	0	0.97977	1
User 4	0	0	0.907359	0.5	0	1.5998E-05	0.00323917	1.1714E-12	0	0	0	0.430966	4.24E-06	4.1E-12	0	0	0.643008
User 5	1	1	1	1	0.5	1	1	1	1	1	0.5	1	1	1	1	0.5	1
User 6	1.9323E-13	0	1	0.999994	0	0.5	0.516898	8.2898E-06	0	0	0.999888	0.632738	0.00051119	5.5662E-11	0	0	1
User 7	0.577198	1.0895E-12	1	1	5.5511E-17	1	0.5	1	1.6653E-16	0.00011893	5.5511E-17	1	1	1	0.992241	5.5511E-17	1
User 8	0.993643	0	1	1	1	0	0.993464	1	0.5	0	9.8197E-08	0	0	1	1	0.995028	0
User 9	1	6.5295E-06	1	1	1	0	1	1	1	0.5	1	0	1	1	1	1	0
User 10	0	1	1	1	1	0	1	1	1	0	0.5	0	1	1	1	1	0
User 11	1	1	1	1	0.5	1	1	1	1	1	1	0.5	1	1	1	0.999998	0
User 12	0.999961	0.0427205	1	1	0.00463137	1	1	0.99367	0.00740648	0.451675	0.00463137	0.5	1	1	0.999983	0.00463137	1
User 13	0.0304042	0	0.999993	1	1	0	0.520452	0.353975	0.0007467	0	0	0	0.999992	0.5	0.992175	0.00981138	0
User 14	0.00025541	0	1	1	1	0	0.99932	0.979411	0.140836	0	0	0	1	0.999868	0.5	0.4211E-06	0
User 15	0.999935	1.4822E-14	1	1	1	0	0.998424	1	0	0.0113967	0	1	1	1	1	0.5	0
User 16	1	1	1	1	0.5	1	1	1	1	1	0.5	1	1	1	1	1	0.5
User 17	0.0204031	0	0.999934	0.809018	0	0.093866	0.7259	1.9937E-06	0	0	0.98199	0.00784562	0.979851	0.00014498	0	0	0.5
User 18	1	0	1	1	1	1	1	1	0	0.00155574	0	1	1	1	1	1	0
User 19	0.0529939	5.5511E-17	1	0.999991	0	0.828928	0.0582236	0.296602	1.6653E-16	1.0483E-09	0	1	0.952305	0.947249	0.00216004	0	0.995559
User 20	0.167288	0	0.992265	0.999981	0	0.0789582	0.978607	0.115672	0	4.5032E-12	0	0.999984	0.0125019	0.890457	0.0925981	0	0.997154
User 21	0	0	0.999997	0.989367	0	0.495832	0.00013875	0.00014698	0	0	0	0	0.853288	0.0689804	0.00182357	0.93918E-11	0
User 22	0	1	0.999999	0.343561	0	0.0001134	2.5528E-05	5.5515E-17	0	0	0.999194	0.00027358	0.29962E-07	0	0	0	0.932294
User 23	0.43171	0	0	0.885058	1	0	0.99924	0.956357	0.850904	0	0	0	0.999877	0.821534	0.753163	0	1
User 24	2.601E-05	0	1	1	1	0	0.9999	0.811947	0.00776346	0	0	0	0.962597	0.869144	6.3566E-12	0	1
User 26	0.9543	3.0557E-08	1	1	1.4758E-10	0.999521	0.990378	0.799994	3.7334E-09	0.00607667	1.4758E-10	1	0.996428	0.999582	0.790364	1.4758E-10	1
User 27	0	0	0.059426	0.570607	0	3.3646E-11	1.1608E-09	0	0	0	0	0.646239	2.4565E-10	3.1957E-06	0	0	4.2504E-05
User 28	0.00012391	0	1	1	0	0.999997	0.907735	0.275892	0	0	0	1	1	0.990998	0.0438783	0	1
User 29	0.0527626	0	0.988713	0.999958	0	0.441714	0.0734625	1.0007E-05	0	3.3523E-13	0	0.999997	0.104686	0.64966	0.0334414	0	0.9998

```

Final values are:
R1a2a value is: 0.584952 R1a2b value is: 0.584952 R1a2c value is: 0.99 R1a2d value is: 0.584952 R1a2e value is: 0.584952 R1a2f value is: 0.635122 R1a2g value is: 0.790977 R1a2h value is: 0.584952 R1a2i value is: 0.135448 R1a2j value is: 0.135448 R1a2k value is: 0.584952 R1a2l value is: 0.364471 R1a2m value is: 0.414743 R1a2n value is: 0.584952 R1a2o value is: 0.635512 R1a2p value is: 0.800183 R1a2q value is: 0.584952 R1a2r value is: 0.362226 R1a2s value is: 0.408051 R1a2t value is: 0.584952 R1a2u value is: 0.440803 R1a2v value is: 0.597127 R1a2w value is: 0.584952 R1a2x value is: 0.440485 R1a2y value is: 0.589209 R1a2z value is: 0.584952 R1a2aa value is: 0.670784 R1a2ab value is: 0.1898921 R1a2ac value is: 0.584952 R1a2ad value is: 0.598856 R1a2ae value is: 0.767924 R1a2af value is: 0.584952 R1a2ag value is: 0.663552 R1a2ah value is: 0.806185 R1a2ai value is: 0.584952 R1a2aj value is: 0.163605 R1a2ak value is: 0.3809 R1a2al value is: 0.584952 R1a2am value is: 0.718183 R1a2an value is: 0.470931 R1a2ao value is: 0.584952 R1a2ap value is: 0.584952 R1a2aq value is: 0.151331 R1a2ar value is: 0.523212 R1a2as value is: 0.584952 R1a2at value is: 0.713244 R1a2au value is: 0.151552 R1a2av value is: 0.584952 R1a2aw value is: 0.584952 R1a2ax value is: 0.584952 R1a2ay value is: 0.195452 R1a2az value is: 0.584952 R1a2ba value is: 0.584952 R1a2bb value is: 0.611544 R1a2bc value is: 0.777453 R1a2bd value is: 0.584952 R1a2be value is: 0.230878 R1a2bf value is: 0.344223 R1a2bg value is: 0.584952 R1a2bh value is: 0.182099 R1a2bi value is: 0.269656 R1a2bj value is: 0.584952 R1a2bk value is: 0.60839 R1a2bl value is: 0.581336 R1a2bm value is: 0.584952 R1a2bn value is: 0.727129 R1a2bo value is: 0.436315 R1a2bp value is: 0.584952 R1a2bq value is: 0.13196 R1a2br value is: 0.418728 R1a2bs value is: 0.584952 R1a2bt value is: 0.418728 R1a2bu value is: 0.60784 R1a2bv value is: 0.584952 R1a2bw value is: 0.53755 R1a2bx value is: 0.678986 R1a2by value is: 0.584952 R1a2bz value is: 0.584952 R1a2ca value is: 0.361311 R1a2cb value is: 0.361311 R1a2cc value is: 0.584952 R1a2cd value is: 0.243871 R1a2ce value is: 0.392188 R1a2cf value is: 0.584952 R1a2cg value is: 0.150128 R1a2ch value is: 0.13196 R1a2ci value is: 0.584952 R1a2cj value is: 0.278542 R1a2ck value is: 0.35374 R1a2cl value is: 0.584952 R1a2cm value is: 0.663552 R1a2cn value is: 0.806185 R1a2co value is: 0.584952 R1a2cp value is: 0.584952 R1a2cq value is: 0.163605 R1a2cr value is: 0.3809 R1a2cs value is: 0.584952 R1a2ct value is: 0.713244 R1a2cu value is: 0.151552 R1a2cv value is: 0.584952 R1a2cw value is: 0.584952 R1a2cx value is: 0.584952 R1a2cy value is: 0.195452 R1a2cz value is: 0.584952 R1a2da value is: 0.724211 R1a2db value is: 0.584952 R1a2dc value is: 0.361655 R1a2dd value is: 0.584952 R1a2de value is: 0.584952 R1a2df value is: 0.584952 R1a2dg value is: 0.584952 R1a2dh value is: 0.150128 R1a2di value is: 0.13196 R1a2dj value is: 0.451372 R1a2dk value is: 0.563752 R1a2dl value is: 0.584952 R1a2dm value is: 0.38187 R1a2dn value is: 0.578137 R1a2do value is: 0.584952 R1a2dp value is: 0.667748 R1a2dq value is: 0.810438 R1a2dr value is: 0.584952 R1a2ds value is: 0.345986 R1a2dt value is: 0.468033 R1a2du value is: 0.584952 R1a2dv value is: 0.626887 R1a2dw value is: 0.73125 R1a2dx value is: 0.584952 R1a2dy value is: 0.132092 R1a2dz value is: 0.676985 R1a2ea value is: 0.584952 R1a2eb value is: 0.584952 R1a2ec value is: 0.663552 R1a2ed value is: 0.806185 R1a2ee value is: 0.584952 R1a2ef value is: 0.584952 R1a2eg value is: 0.163605 R1a2eh value is: 0.3809 R1a2ei value is: 0.584952 R1a2ej value is: 0.713244 R1a2ek value is: 0.151552 R1a2el value is: 0.584952 R1a2em value is: 0.584952 R1a2en value is: 0.584952 R1a2eo value is: 0.195452 R1a2ep value is: 0.584952 R1a2eq value is: 0.584952 R1a2er value is: 0.584952 R1a2es value is: 0.13196 R1a2et value is: 0.418728 R1a2eu value is: 0.584952 R1a2ev value is: 0.584952 R1a2ew value is: 0.584952 R1a2ex value is: 0.584952 R1a2ey value is: 0.195452 R1a2ez value is: 0.584952 R1a2fa value is: 0.724211 R1a2fb value is: 0.584952 R1a2fc value is: 0.361655 R1a2fd value is: 0.584952 R1a2fe value is: 0.584952 R1a2ff value is: 0.584952 R1a2fg value is: 0.584952 R1a2fh value is: 0.150128 R1a2fi value is: 0.13196 R1a2fj value is: 0.451372 R1a2fk value is: 0.563752 R1a2fl value is: 0.584952 R1a2fm value is: 0.38187 R1a2fn value is: 0.578137 R1a2fo value is: 0.584952 R1a2fp value is: 0.667748 R1a2fq value is: 0.810438 R1a2fr value is: 0.584952 R1a2fs value is: 0.345986 R1a2ft value is: 0.468033 R1a2fu value is: 0.584952 R1a2fv value is: 0.626887 R1a2fw value is: 0.73125 R1a2fx value is: 0.584952 R1a2fy value is: 0.132092 R1a2fz value is: 0.676985 R1a2ga value is: 0.584952 R1a2gb value is: 0.584952 R1a2gc value is: 0.663552 R1a2gd value is: 0.806185 R1a2ge value is: 0.584952 R1a2gf value is: 0.584952 R1a2gg value is: 0.163605 R1a2gh value is: 0.3809 R1a2gi value is: 0.584952 R1a2gj value is: 0.713244 R1a2gk value is: 0.151552 R1a2gl value is: 0.584952 R1a2gm value is: 0.584952 R1a2go value is: 0.195452 R1a2gp value is: 0.584952 R1a2gq value is: 0.584952 R1a2gr value is: 0.584952 R1a2gs value is: 0.13196 R1a2gt value is: 0.418728 R1a2gu value is: 0.584952 R1a2gv value is: 0.584952 R1a2gw value is: 0.584952 R1a2gx value is: 0.584952 R1a2gy value is: 0.195452 R1a2gz value is: 0.584952 R1a2ha value is: 0.724211 R1a2hb value is: 0.584952 R1a2hc value is: 0.361655 R1a2hd value is: 0.584952 R1a2he value is: 0.584952 R1a2hf value is: 0.584952 R1a2hg value is: 0.584952 R1a2hh value is: 0.150128 R1a2hi value is: 0.13196 R1a2hj value is: 0.451372 R1a2hk value is: 0.563752 R1a2hl value is: 0.584952 R1a2hm value is: 0.38187 R1a2hn value is: 0.578137 R1a2ho value is: 0.584952 R1a2hp value is: 0.667748 R1a2hq value is: 0.810438 R1a2hr value is: 0.584952 R1a2hs value is: 0.345986 R1a2ht value is: 0.468033 R1a2hu value is: 0.584952 R1a2hv value is: 0.626887 R1a2hw value is: 0.73125 R1a2hx value is: 0.584952 R1a2hy value is: 0.132092 R1a2hz value is: 0.676985 R1a2ia value is: 0.584952 R1a2ib value is: 0.584952 R1a2ic value is: 0.663552 R1a2id value is: 0.806185 R1a2ie value is: 0.584952 R1a2if value is: 0.584952 R1a2ig value is: 0.163605 R1a2ih value is: 0.3809 R1a2ii value is: 0.58495
```

Results

Results for each time window is in a different excel spread sheet. Below report are for complete p-value

