IMPLEMENTATION OF THE CALCULATION OF SOME PROBLEMS OF LIMIT THEOREMS IN THE STATISTICA 10 PACKAGE

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Absract

The main objective of this paper is to solve the central limit theorem problems presented in the STATISTICA 10 package with the possibility of computer implementation.

Keywords: central limit, random variable, norm, statistics, experiment.

1 . We know that the intermediate doubt theorem proves that the sum of n unbiased elements tends to normal distribution in certain cases, asymptotically ($n \to \infty$ case). We consider the statistical experiments on the computer that describe the intermediate doubt theorems [4-6].

Let's consider the design of a symmetrical coin $p = \frac{1}{2}$, $q = 1 - p = \frac{1}{2}$. We will create a generation of the X_k wave and model the results of the experiment [1-3,5,7].

Moneta n rank when you are tired , the emblem appeared to be the noise

$$h = \frac{\sum_{k=1}^{n} X_k}{n}$$

$$X_к = \begin{cases} 1\,, \text{ if k times thrown, the emblem came out} \\ 0\,, \text{ if k times thrown, the number came out} \end{cases} \quad ,k = 1,2,\ldots,n$$

We, start STATISTICA 10 package iske our cup ham yes file we hurt Take it that's why boss betty print , electronic plate appeared let's eat Electronic table in fact , oniń olshemi . Table olshemi ádette 10 columns 10 times in the cornice child [3,4]. We are from 664 Qatar stand up table we are different so click betty our base In the end , *Sozdat new document* mirror it bloomed (Suwret 1)

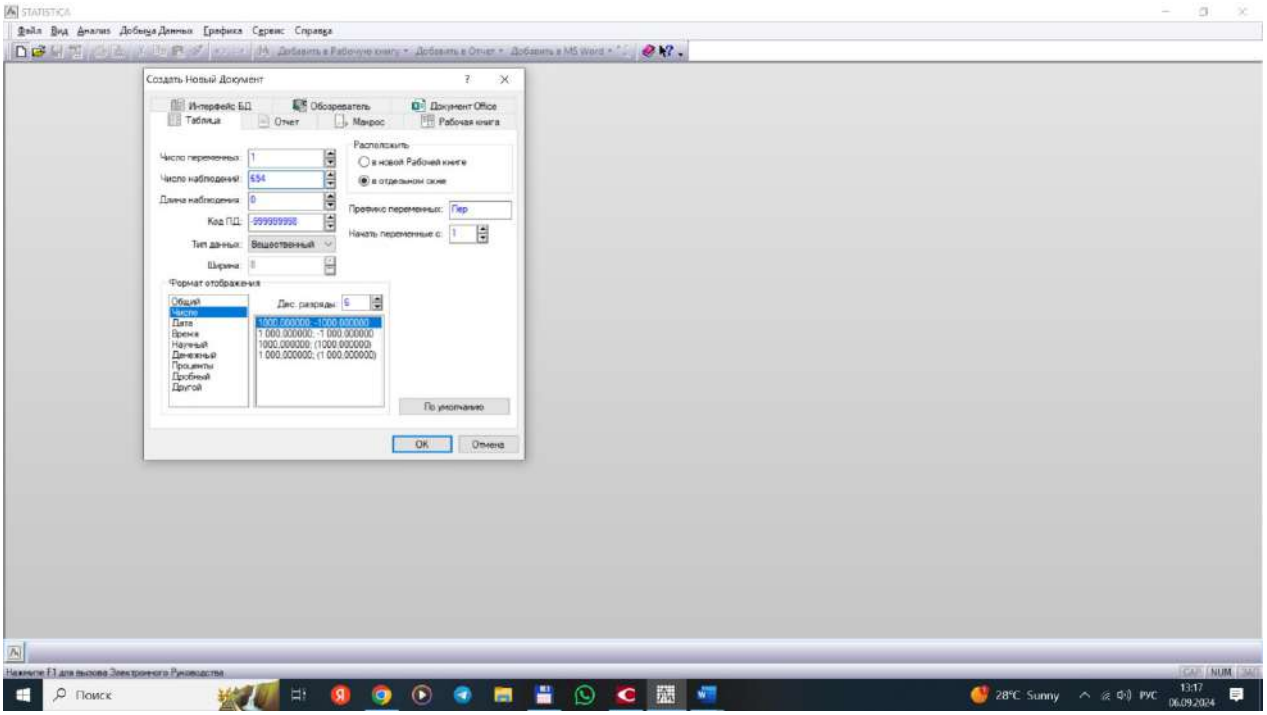
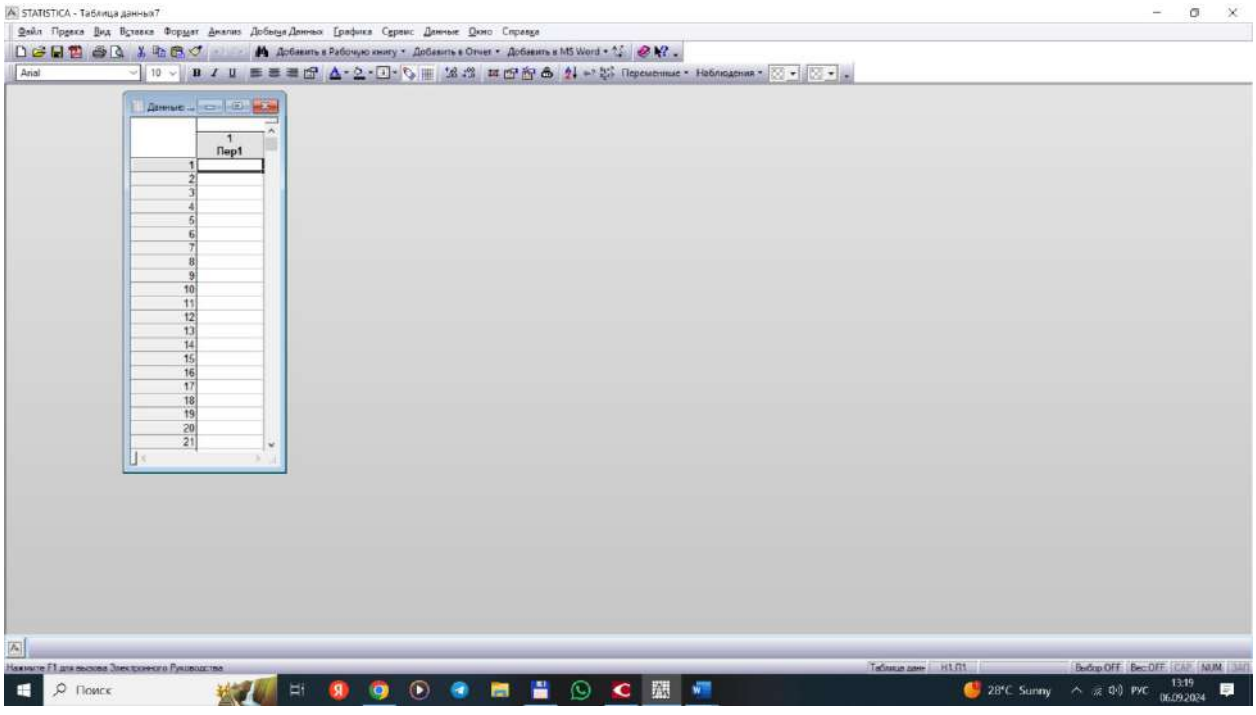


Photo 1

Let's press OK. In the result



exactly.

Surprising X_k, k= 1, 2, ..., 664 symbols , *Per1* özgeriwshisine generation our body Take it therefore , *Peter1* change ûstinde , tiskhanshanıń shep don't be full two rank our base On the screen given change *specification* mirror appeared child (

Súwret 2). From this , *Format autobrageny* bóliminen *Chislo* n let's choose Pay already *Des* . *discharge* bólimine 6 punishments . Then , *Dlinnoe imya* maidan

= trunc (rnd (1) + 0.5) generation jasaw formula our punishment In the end

,

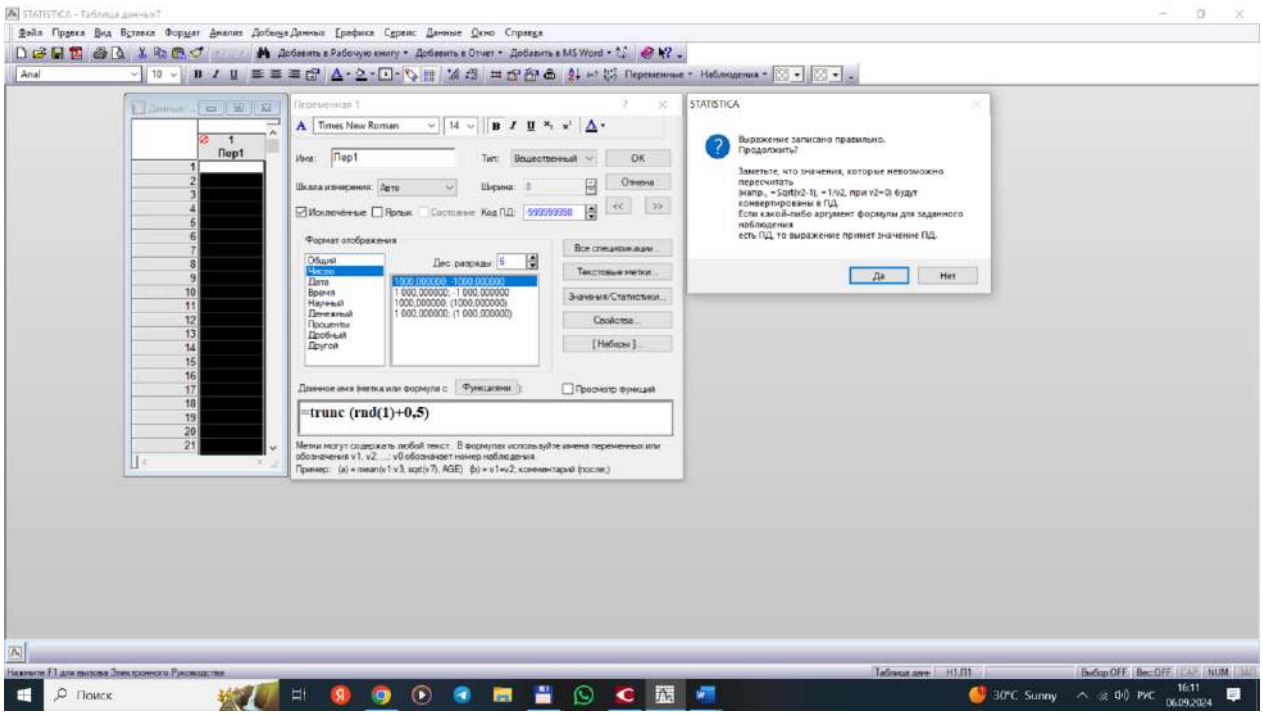
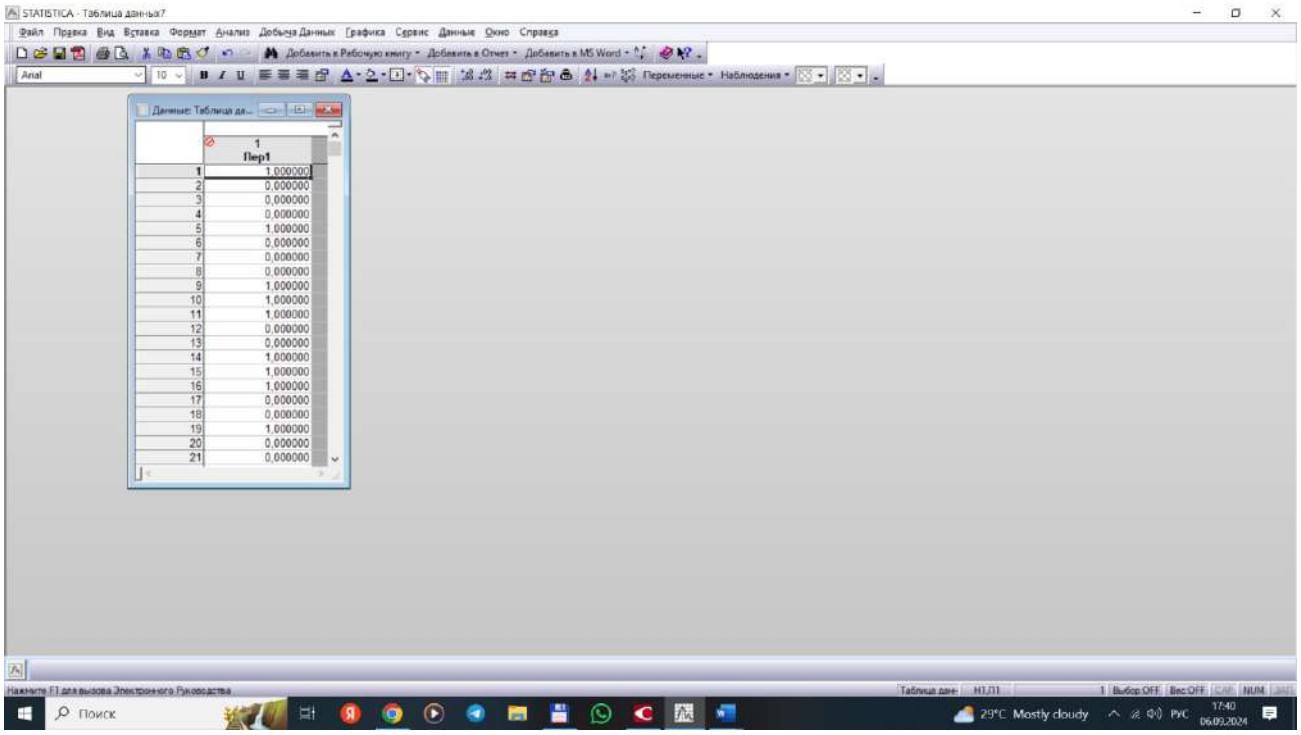
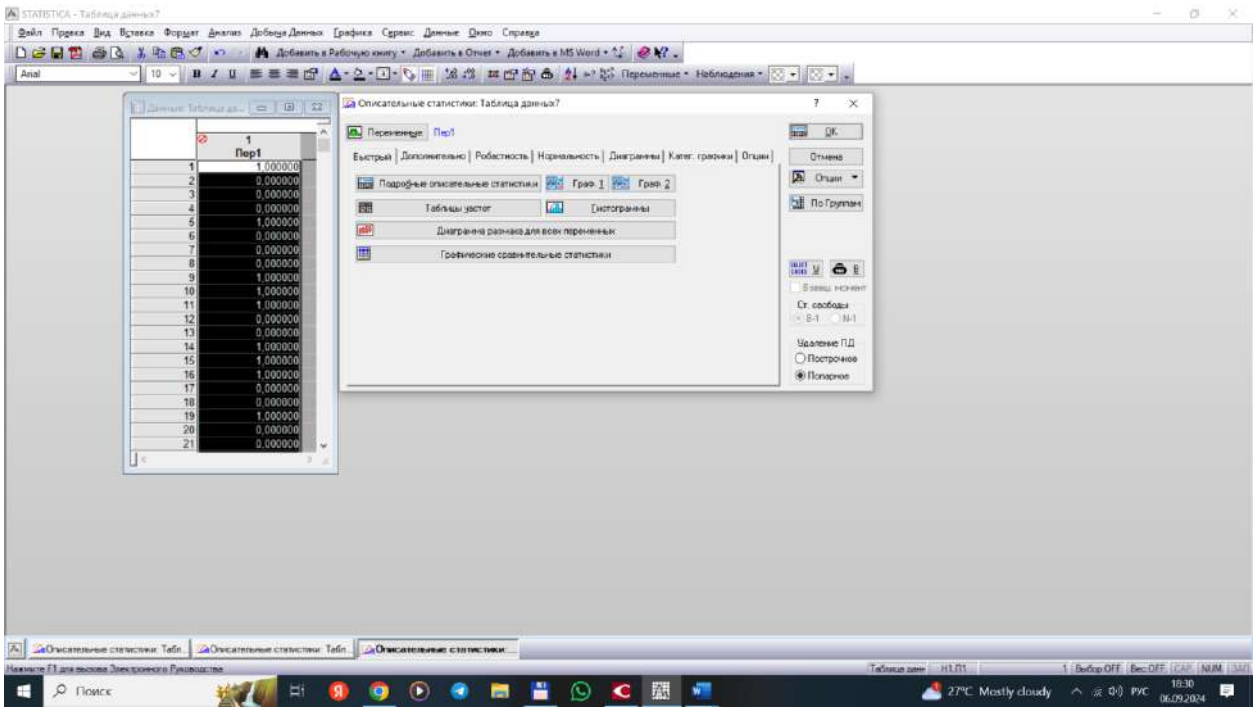


Photo 2

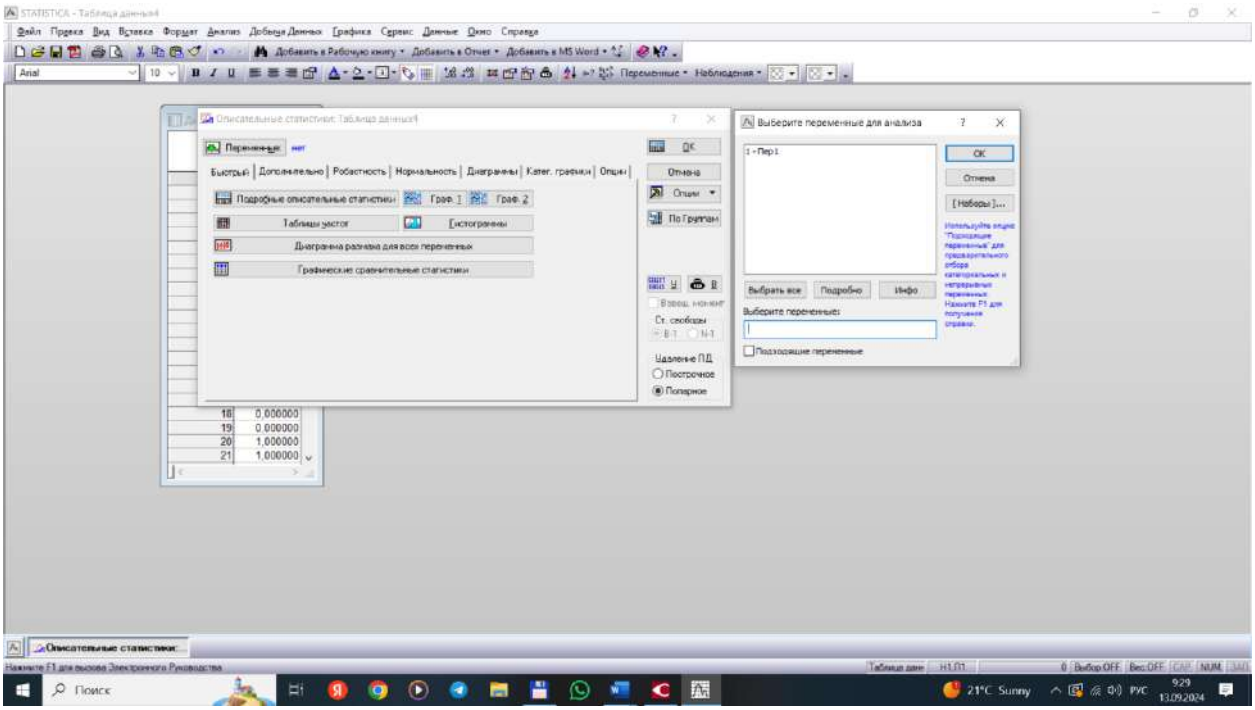
mirror it came out OK, do n't worry our base Ashilgan on the screen given Ańlatpa (formula) is correct means shout appeared child From this *at* ham *net* two the answer tüymelerinen , *da* don't be full our base ham in tómen result yes our child



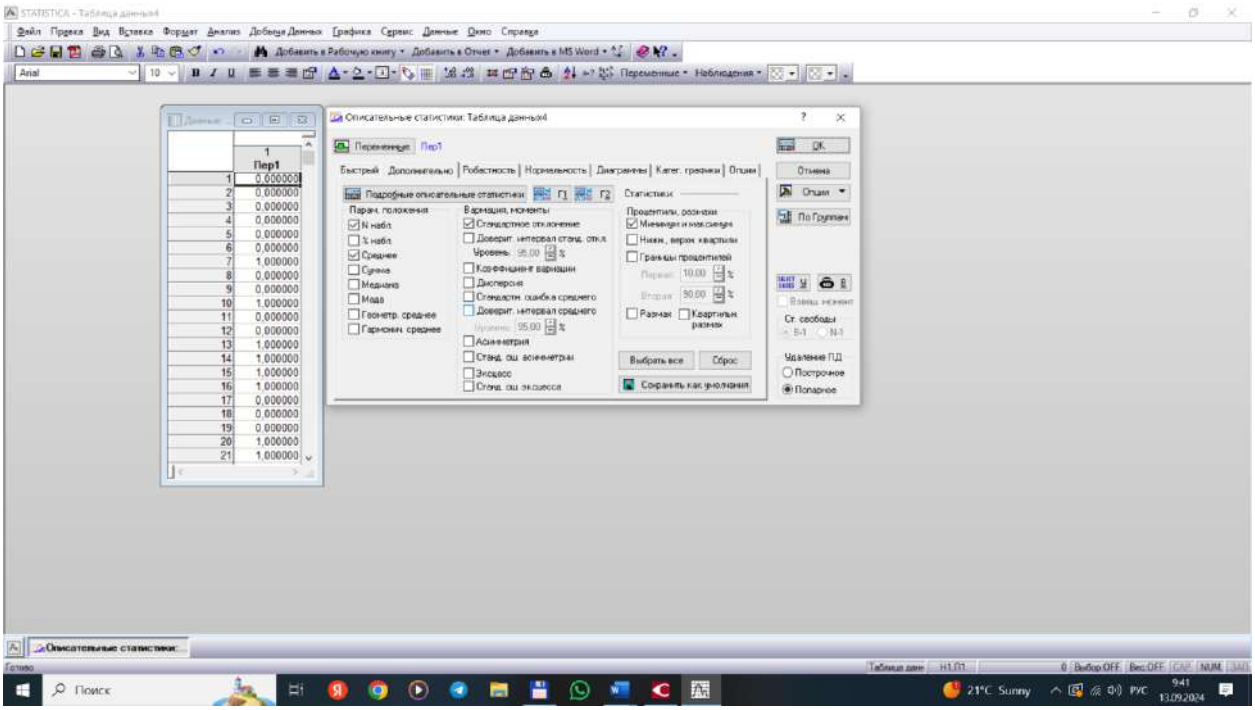
Trunc operator R (0.5; 1.5) , equation great bólistiriwge yes surprised the winds meanings Putin break up it counts . Now we , Per1 so average (srednee) manisti clearly then , *h* be quiet let 's count Take it therefore , *Analysis* menu kirip , *Basic statistics and tables dannyx* mirror it came out .



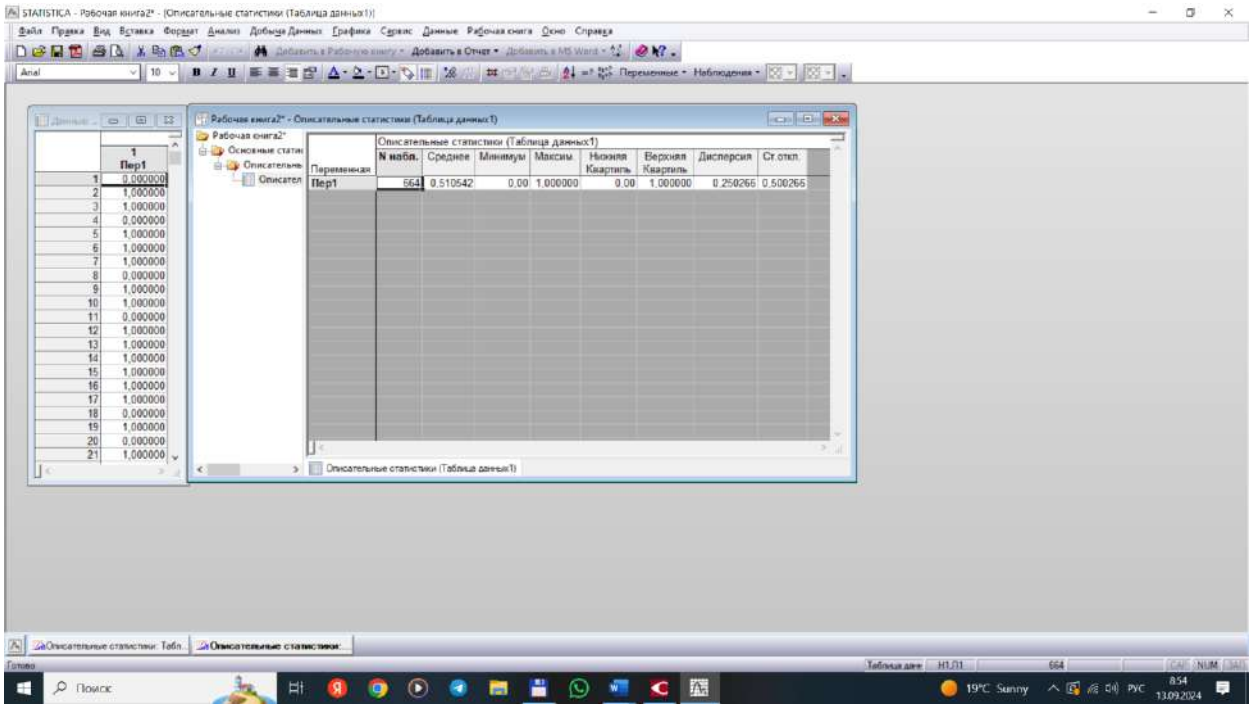
From this *Peremennye* Let's choose *Select variables for analysis* mirror appeared child



Bul exactly Per1 change let's define OK, do n't worry our base Then *Bystryy Dopolnitelno* commander let's choose *Descriptive statistics: Tablitsa dannyx* mirror appeared child From here , to us for example that's why necessary information of terms let's choose (for example , N nabl., Srednee hám t . b .).



OK, do n't worry our base In the end ,



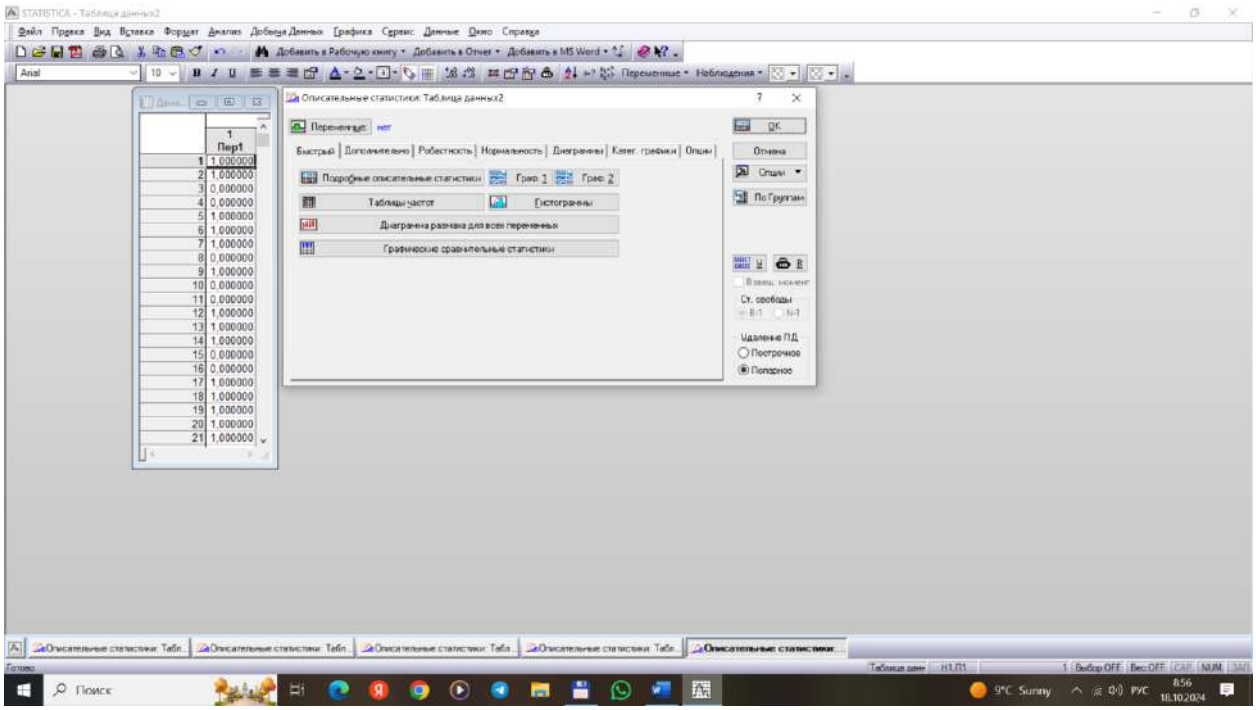
Suwret 3 . Esaplaw results

mirror it came out . Bul received result , 0.5 penen shake

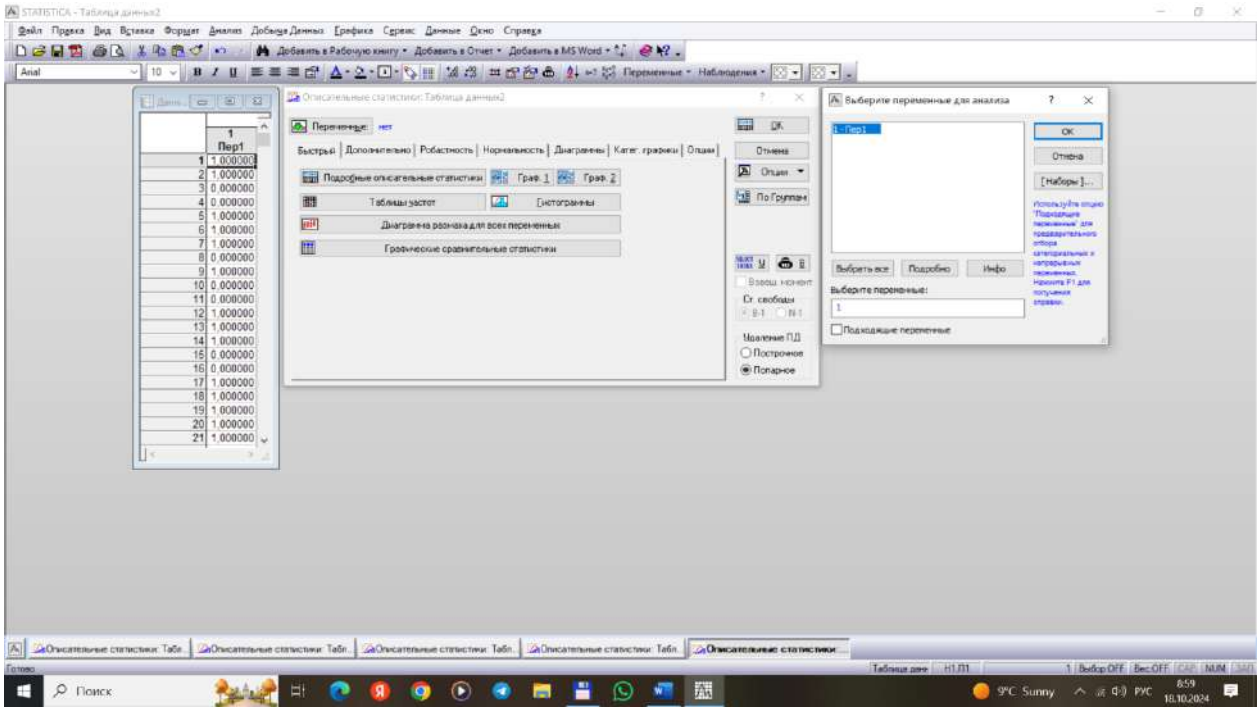
$$|h-0,5|\le 0,05$$

to equality let's say

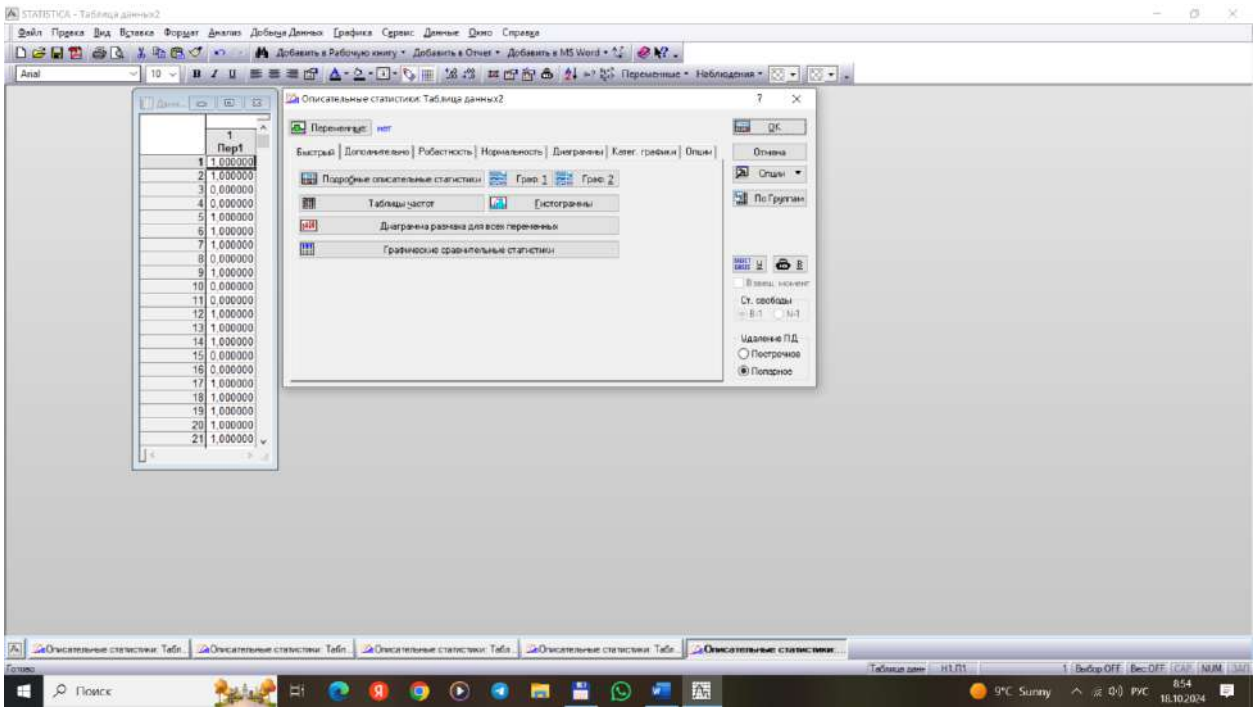
Now , we will change it followed be quiet know so , again *A analysis* Menu , *Basic statistics i tabs dannyx* look our food



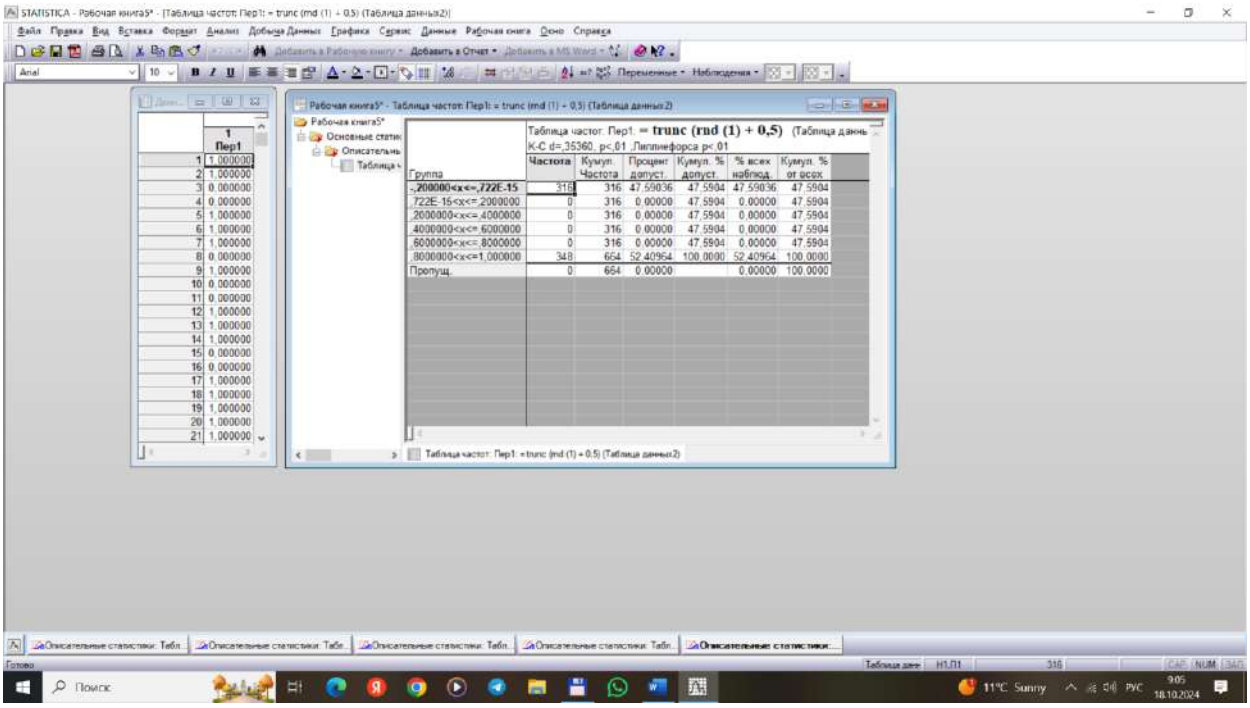
From this *Peremennye* let's choose ham *Select variables for analysis* mirror appeared child Bul exactly Per1 change let's define



OK, do n't worry our base Then



mirror appeared child Bunnan , *Table frequency* we choose (because , to us followed it was quiet know that's why)



Bul table the jogger together , us We didn't need it placement korcetilgen information kóriwge child

Solay e.g. , we use the STATISTICA 10 package doubt theorem problems simple kind of iske asırıw possibilities from me we met

2. Orayl ı q doubt theorems *STATISTICA 10* package *n* You 're beautiful tos ı nnanl ı shaman ıń qos ı nd ı s ı n ıń n á tijjelerin esaplawd ı köremiz [4,7].

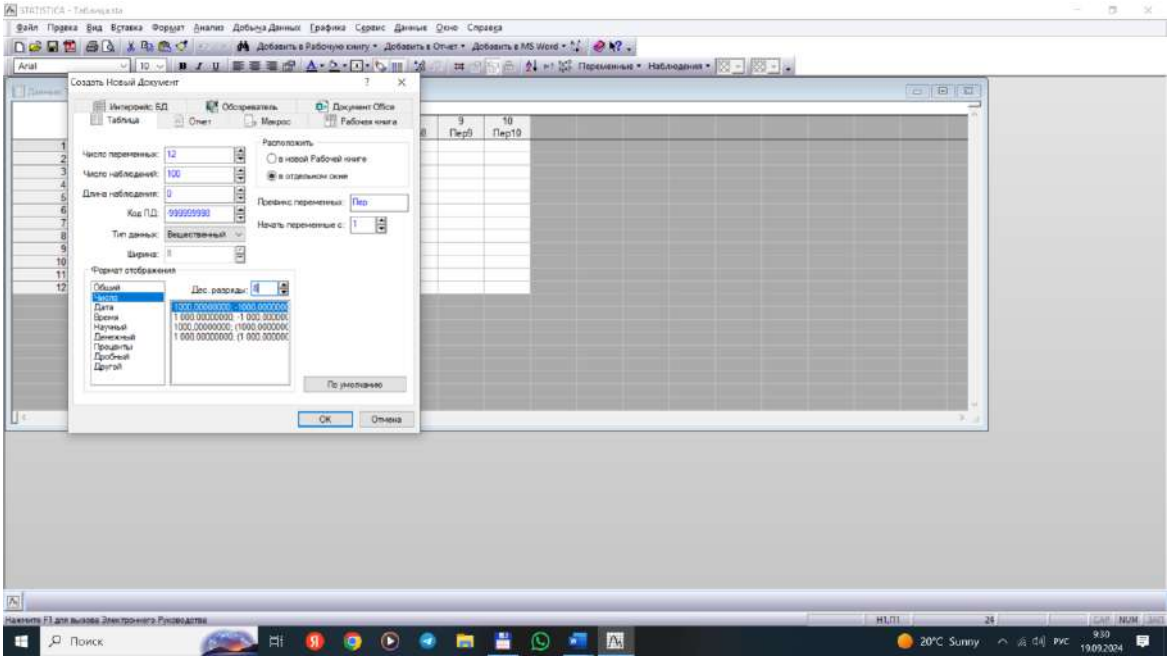
The theorem of the average shadow, the combination of p unbiased and unbiased shaman, in certain cases, asymptotically ($p \to \infty$ in the case of) , it was confirmed that normal balistiriwge is expected. At any time, the conditions are met only in the case where all the components are distributed equally, for example, $X_i \square R(0,1),\ i = 1, 2, ..., p$. We present the solution of this theorem below. We create the following results of the eight-stone wind, $X_i \square R(0,1),$ i = 1, 2,..., 8 generations:

$$S_2 = X_1 + X_2,\ S_3 = X_1 + X_2 + X_3, ...,$$
$$S_6 = X_1 + X_2 + ... + X_6,\ S_8 = S_6 + X_7 + X_8.$$

they missed appeared let's eat Bul shadows that's why histograms our body Histogram graphics are attached the number excess count , symmetrical wait türdegi iymeklikle - normal balistiriw density graph Please let us know [1-4].

STATISTICA 10 package place

We are from 12 columns 100 lines (12V * 100S) are cut ibarat , jańa information of the file our body Take it that's why boss betty our base Nátiyjede , *Sozdat new document* mirror (súwret 4)



Suwret 4.

Bul exactly , *Chislo peremennyx* bólimine 12, al *Chislo nablyudeni* bólimine 100 punishment OK, do n't worry our base In the result we therefore ,

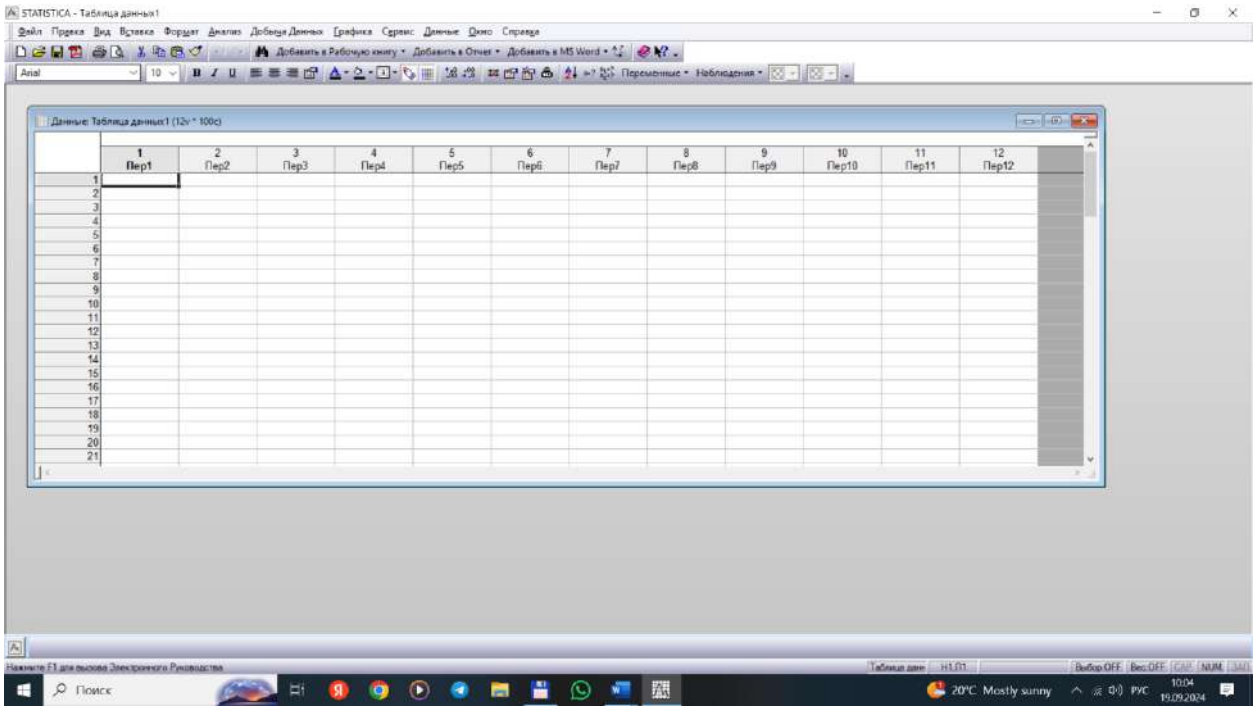


Photo 5.

12v ×100c electronic chest ready boldly (photo 2). That's what we are now problems $X_1, X_2, ..., X_7, X_8, S_2, S_4, S_6, S_8$ ózgeriwshilerdiń of terms izbe-iz , ready already chest to the columns our input need 8 pieces the winds bagel the results , $X_i \square R(0,1)$, i = 1, 2,..., 8 generations our body : X_1 =Peter 1, X_2 = Peter 2, …, X_8 = Peter 8, $S_2 = X_1 + X_2, S_3 = X_1 + X_2 + X_3, ..., S_6 = X_1 + X_2 + ... + X_6$, $S_8 = S_6 + X_7 + X_8$

Bul they missed esaplawdı , ***STATISTICA 10*** in the package simple ozlestirив maqsetinde , we are in tómendi were determined let's enter rain ***STATISTICS 10*** package from the designations we will use

S_2 =Per1+Per2 , S_4 =Per1+Per2 +Per3+Per4, S_6 =Per1+Per2 +Per3+Per4+ Per5+Per6, S_8 =Per1+Per2 +Per3+Per4+ Per5+Per6+ Per7+Per8

Now , bul ó zgeriwshilerdi ń h á mmesini ń m á nislerin generation jasaw ı m ı z z á rural h á m take á mellerdi izbe - trail or ı nlaym ı z . D á slep , *Per1* ó zgeriwshisi 100 m á nislerdi generation Jasawd ı k ó remiz . Take it ush ı n , *Per1* ó zgeriwshisini ń ú stinde , t ı shkanshan ıń shep do n't eat two m á rtebe basam ı z . On the screen given change *specification* mirror appeared child (súwret 6).

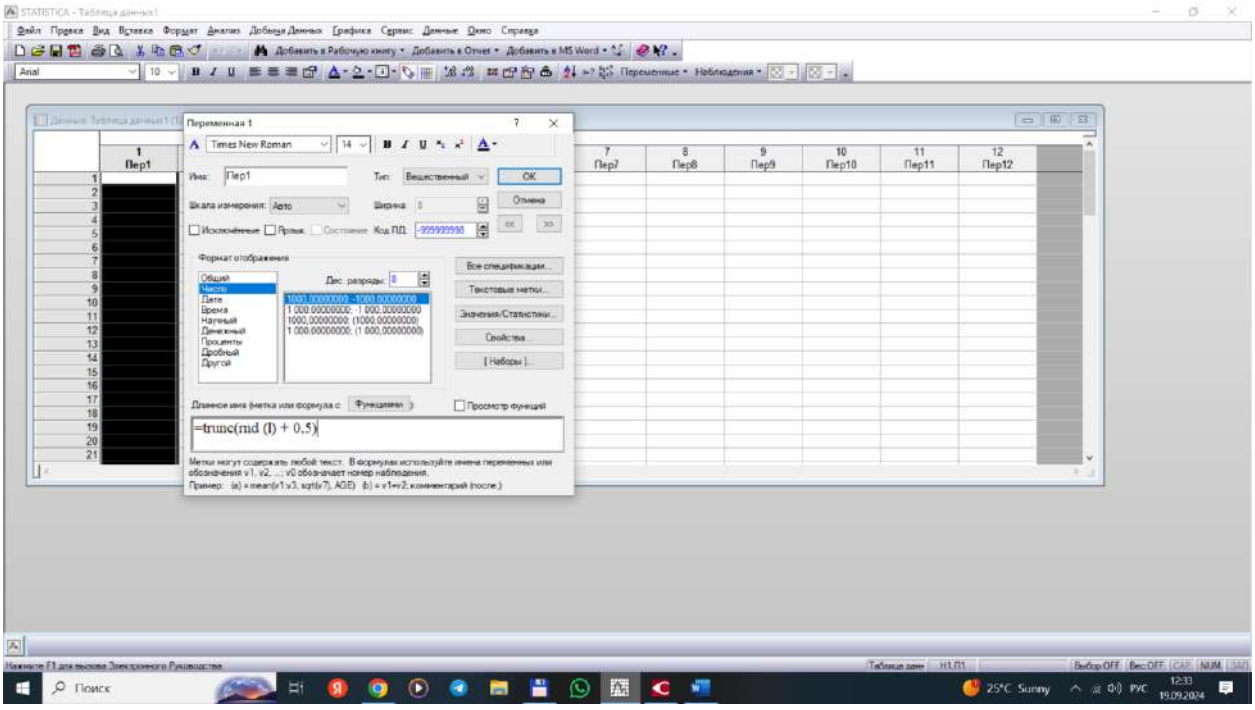
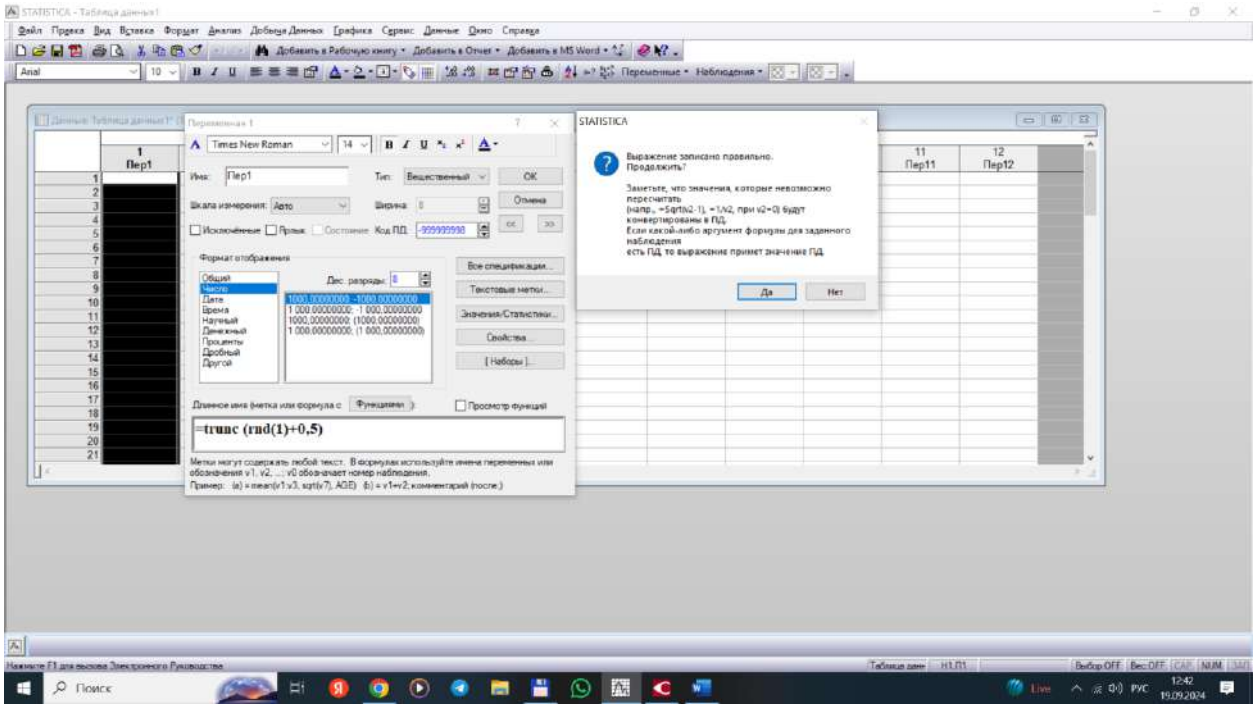


Photo 6 .

Dlinnoe imya maidana = **trunc (rnd (1)+ 0.5)** generation formula our punishment OK, do n't worry our base In the result



mirror it came out . We so give it up The formula is correct means shout appeared child From this *also net* two the answer tüymelerinen , *do* n't tüyme our base ham in tómen result yes our child

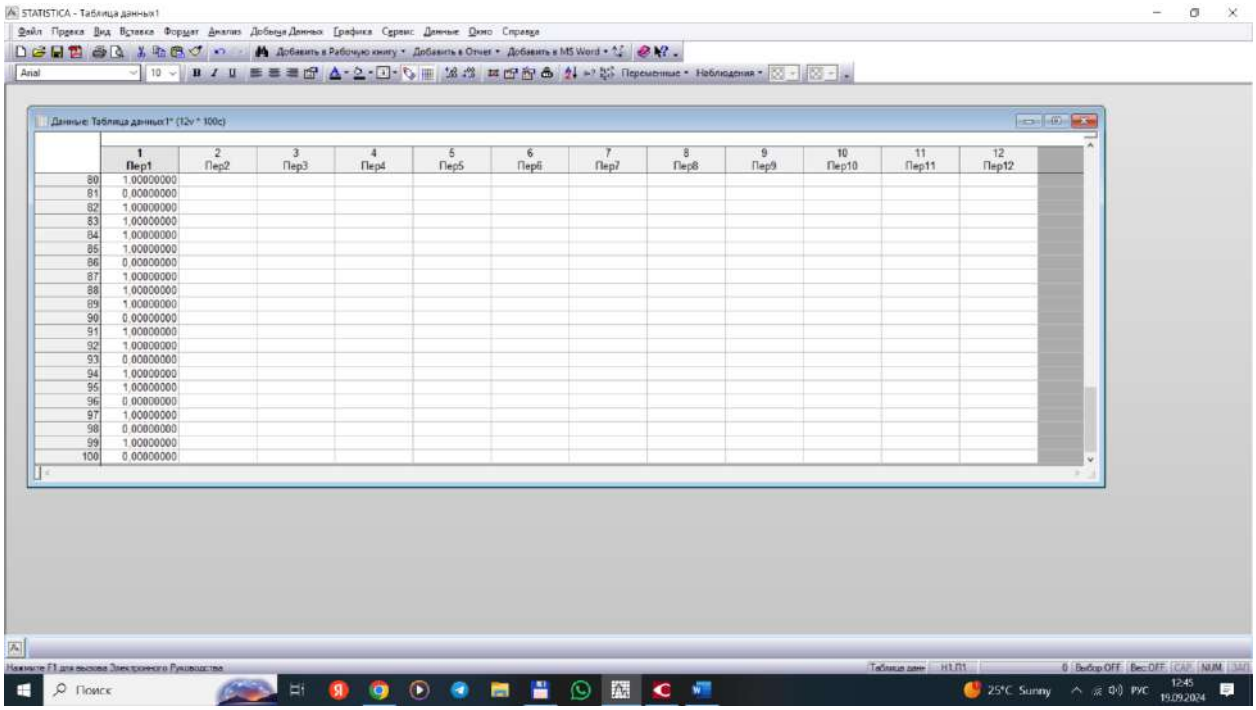


Photo 7 .

We now , it 's here uksas Per2, Per3, Per4, Per5, Per6, Per7, Per8 ó zgeriwshilerdi ń h á mmesini ń m á nislerin , **= trunc (rnd (1)+0.5)** in formulas ı j á rdeminde generation my body

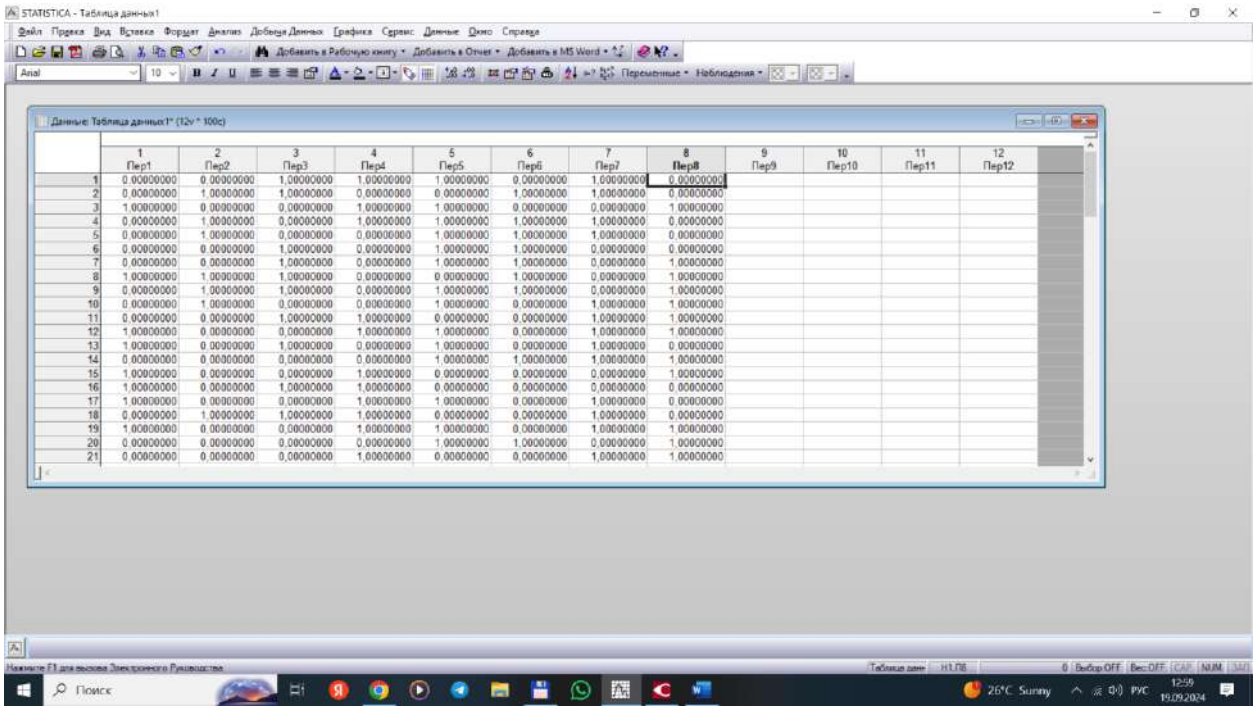


Photo 8 .

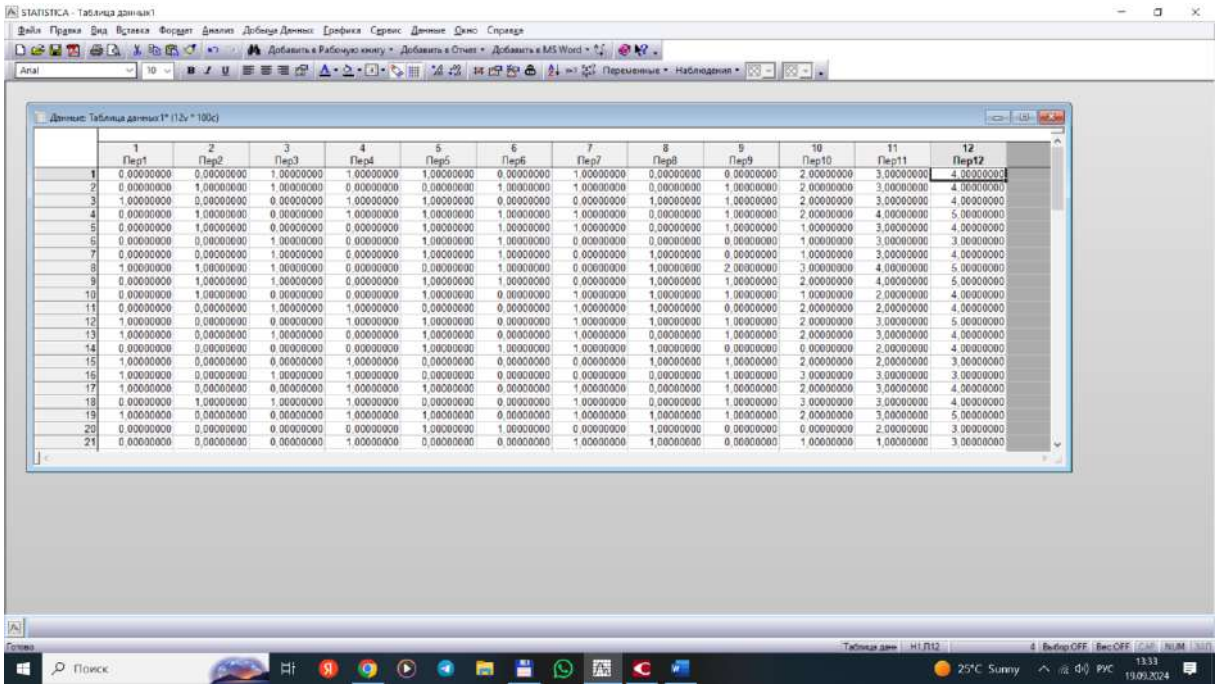
Now , S_2 , S_4 , S_6 , S_8 ózgeriwshilerdiń everything of manis for example that's why , in tómen from formulas we will use

S_2 = Per9=Per1+Per2 , S_4 = Per10=Per1+Per2 +Per3+Per4

S_6 = Per11=Per1+Per2 +Per3+Per4+ Per5+Per6

S_8 = Per12=Per1+Per2 +Per3+Per4+ Per5+Per6+ Per7+Per8.

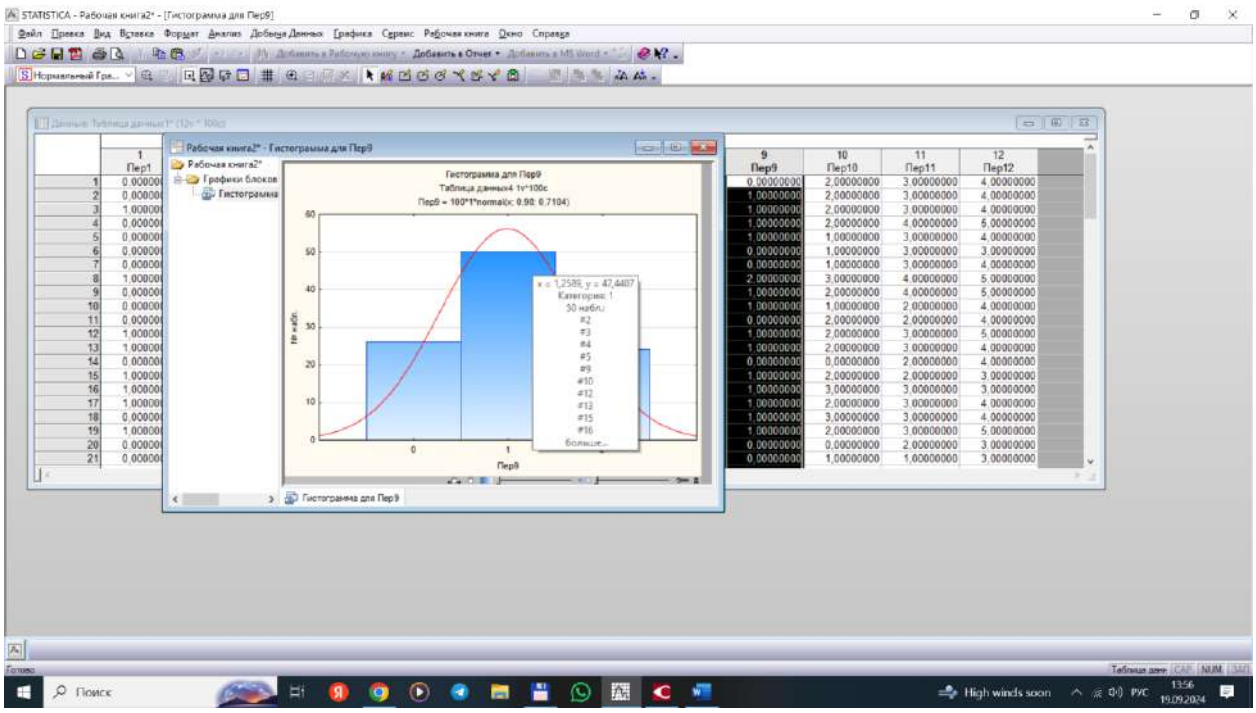
In the result



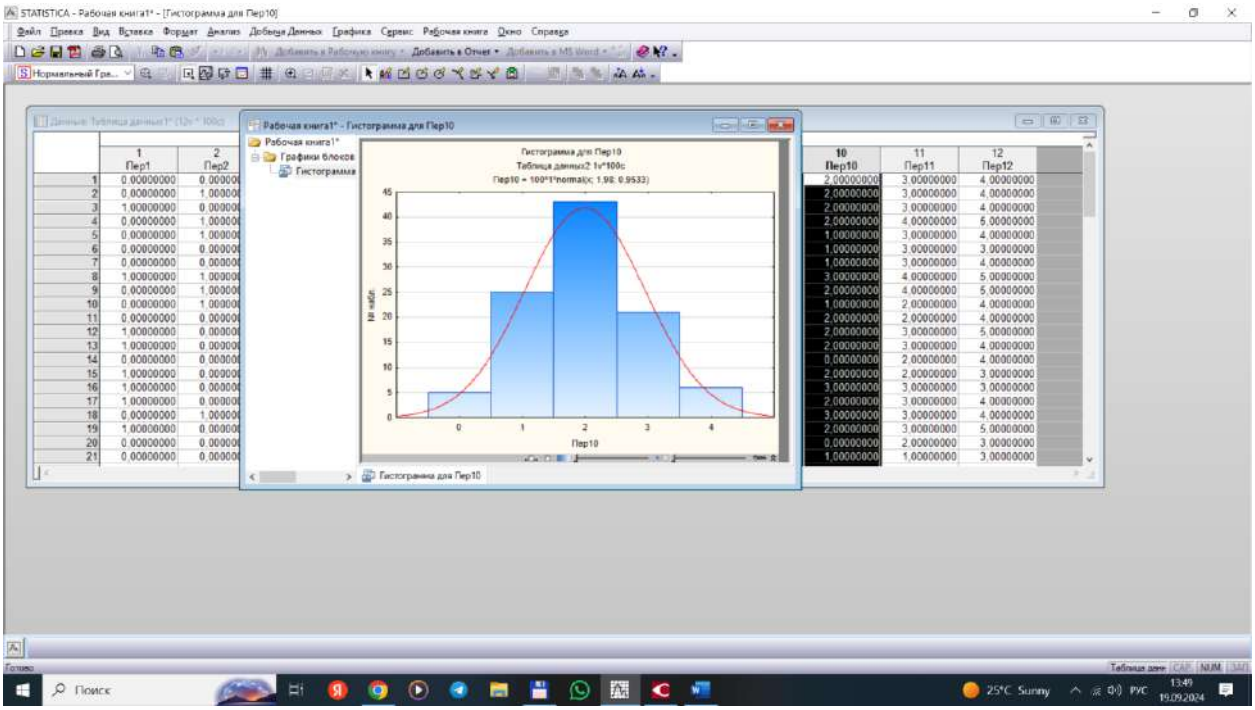
esaplaws to the table yes my child

Now S_2 (Per9), S $_6$ (Per10) h á m S $_8$ (12) ó zgeriwshiler that 's it histograms ı jasaym ı z . Take it that 's it cursor , h á r one ó zgeriwshini ń atamas ı n ıń ú stine aparam ı z h á m t ı shkanshan ıń o ń t á repi do n't eat basam ı z . Then , ash ı l ǵ an mirror *Graphics blokovyx dannyx* → *Histogram Po stolbtsam* á mellerdi or ı nlaym ı z .

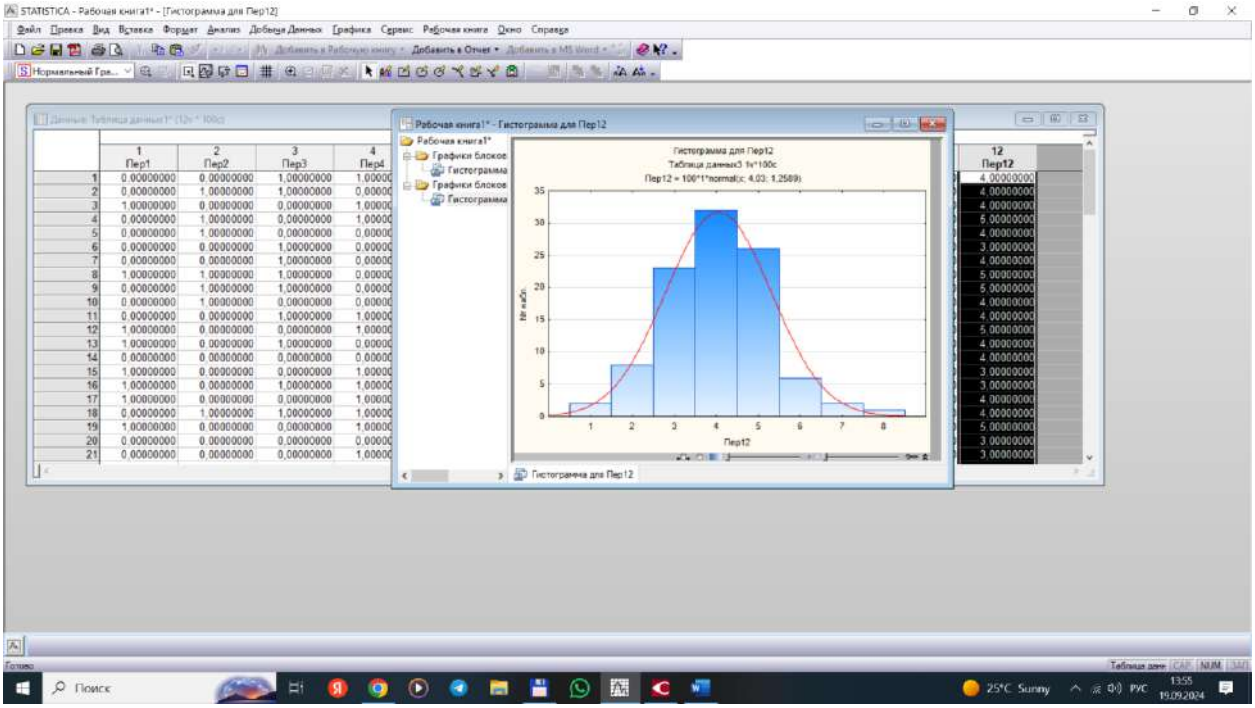
1) S_2 (Per9) ózgeriwshisi that's why histogram



Amendment of S $_6$ (Per 10). that's why histogram



3) Amendment of S $_8$ (12). that's why histogram



Solay etip , we S_2 (Per9), S $_6$ (Per10) h á m S $_8$ (12) ó zgeriwshiler that 's it jasal ǵ an histograms , juw ı q t ú rde normal b ó listiriwge jaq ı nlaskan ı n k ó remiz . Bul if so , orayl ı q doubt theorems ı, *n* You 're beautiful tos ı nnanl ı shaman ıń kos ı nd ı s ı , marked one in j ǵ days , asymptotically ı q t ú rde ($p \to \infty$ *ja ǵ day)* , normal b ó listiriwge umt ı l ı w ı n tast ı ı ı qlawd ıń dur ı sl ıǧı d á lillin k ó rsetedi .

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