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## **DEVELOPMENT OF MANAGEMENT TOOLS IN GOVERNMENT STRUCTURES BASED ON BIG DATA ANALYSIS**

***Abstract:** the article presents the results of studies on the creation of managerial tools for further use in public sphere. The main idea of a work is to create a transparent system of calculation of funds allocated by the state treasury for needy persons, as state assistance. Implementation of the project includes general study of properties and subtleties of working with big data, knowledge of mathematical logic, algebra and number theory, availability of programming skills. The Python was chosen as the programming language, as it includes a large number of libraries for comfortable work with data, and is visible in use.*

*It should be noted that today the number of families with many children throughout the territory of the Republic of Kazakhstan is 340,377 thousand families, the number of families with a small income of about 391 thousand pieces, the number of single parents receiving state benefits aspires to 125 thousand people.*

*The existence of such an acute issue in the area of assistance to those in need encouraged the State to allocate funds to close the problem. The software platform studied in this article serves for visual information of citizens.*

***Keywords:** development of software platform, software code, formula for calculation, big data analysis, management tool, input/output menu, Python libraries, state statistics, tax incentives and benefits, Laws of the Republic of Kazakhstan, targeted social assistance, subsistence minimum, reference function.*

**Аннотация:** в статье представлены результаты исследований по созданию инструментов управления для дальнейшего их использования в обществе. Основная идея данной работы заключается в создании прозрачной системы расчета средств, выделяемых государственной казной для нуждающихся лиц, в качестве государственной помощи. Реализация проекта включает в себя общее изучение свойств и тонкостей работы с большими данными, знание математической логики, алгебры и теории чисел, наличие навыков программирования. В качестве языка программирования был выбран Python, так как он включает в себя большое разнообразие библиотек для удобной работы с данными.

Следует отметить, что сегодня число многодетных семей на всей территории Республики Казахстан составляет 340 377 тысяч семей, число семей с небольшим доходом составляет около 391 тысячи семей, число одиноких родителей, получающих государственные пособия, поднимается до отметки 125 тысяч человек.

Наличие столь острой проблемы в области оказания помощи нуждающимся побудило государство выделить средства на решение данной проблемы. Программная платформа, изученная в статье, будет полезной для визуального информирования граждан.

**Ключевые слова:** разработка программной платформы, программный код, формула расчета, анализ больших данных, инструмент управления, меню ввода-вывода, библиотеки Python, государственная статистика, налоговые льготы и стимулы, законы Республики Казахстан, целенаправленная социальная помощь, прожиточный минимум, справочник по функциям.

*Introduction.* Today, the development of science, engineering and often art is proportional to the development of digital technologies, which not only influence the formation of all these spheres separately, but also contribute to their fusion. A similar example of hybridization of all the above-mentioned spheres is the sphere of digital informing the public about important information. The issue of the assessment of

State payments, their condition, and the exact funds received each time brings to a standstill an unarmed citizen who is part of a vulnerable segment of the population.

Unfortunately, a large number of ordinary people in the Republic of Kazakhstan are in the dark due to their economic and informational illiteracy. In this regard, it was decided to provide in digital format a settlement tool for privilege provision.

Based on work [1], a software platform was developed that will enable people from financially disadvantaged families to calculate the amount of benefits and allowances that they can count on when filling out the necessary documents.

Based on the idea of development, it was decided to break the work into three parts. Adhering to such tactics will make it possible to better study each part, and also provide independent corrective work, if necessary, on the required parts. Subsequent work will remain in crossing and transforming the components into a single view.

So, at the initial stage, it was decided to start collecting data for further work on them. This relational database, where data is entered into the table in accordance with domains, attributes. As the main source of big data is the materials of the state statistics website of the Republic of Kazakhstan.

The next step is the design work. Here it is necessary to understand that to write the program you need a powerful foundation in the form of an order of algorithms, which in our case are based on mathematical calculations. Using mathematical logic and physical representation of unknown variables, one can produce an equation whose answer will be the magnitude sought. The order of data presentation in tasks of this type plays an important role, the final type of data presentation is shown in Table 1.

Table 1

Data Presentation Examp

Order of parameters	Description of parameter	Mathematical representation
1	Number of family members	$x$
2	Single parents	$y$
3	Level of a living wage	$z$
4	Disability	$t$
5	Unemployment	$m$
6	Availability of other benefits	$n$

Compliance with this procedure is an important step in filling databases. The calculation is based on the screening of inappropriate characteristics for each family individually. Thus, more needy families will be in priority assignment.

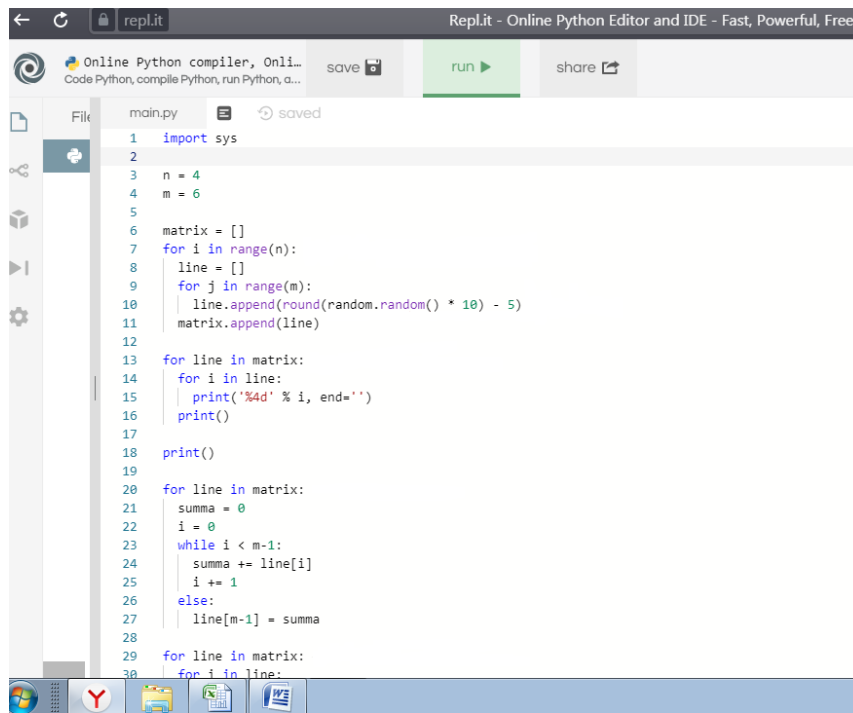
As a result, we have:

$$S_i = \sum \frac{\sum_{i=1}^{i=\infty} \frac{A - (x_i + y_i + t_i + m_i)}{z_i} + \sum_{i=1}^{i=\infty} n_i}{2}$$

*Practical Part.* The third phase focuses entirely on the program code. At this stage, the software was specified, the functions of which include the following procedures:

- data input;
- data read-out;
- calculation operations according to the given formulas;
- display the result.

It should be noted that to create the main code – functions and procedures of the specified code were divided into separate fragments and implemented each separately. This decision is related to the fact that initially works were carried out to study the spelling of the programming language and its corresponding libraries, in the further interests of exploitation. Python was chosen as the programming language, due to its extensive use (Fig. 1).



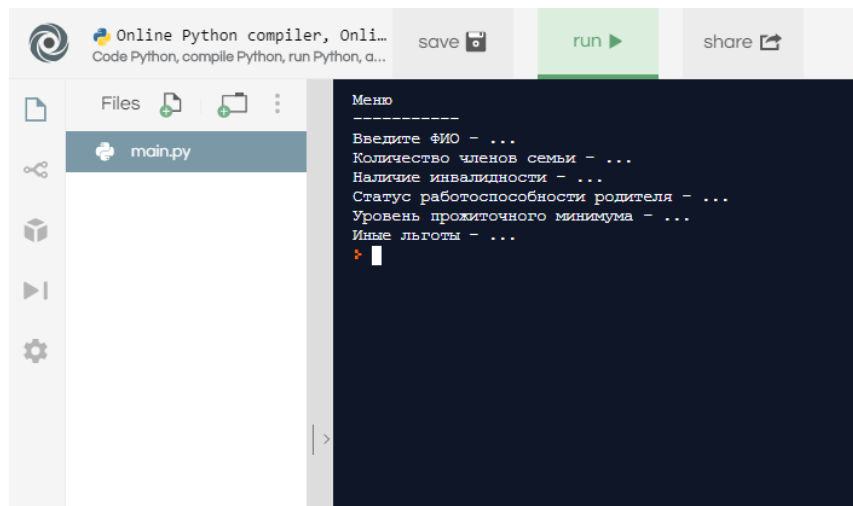
```

1 import sys
2
3 n = 4
4 m = 6
5
6 matrix = []
7 for i in range(n):
8     line = []
9     for j in range(m):
10        line.append(round(random.random() * 10) - 5)
11    matrix.append(line)
12
13 for line in matrix:
14     for i in line:
15        print('%4d' % i, end='')
16    print()
17
18 print()
19
20 for line in matrix:
21     summa = 0
22     i = 0
23     while i < m-1:
24        summa += line[i]
25        i += 1
26     else:
27        line[m-1] = summa
28
29 for line in matrix:
30     for i in line:

```

Fig. 1. Code Overview

Working with databases, always take into account the correct narrative of data, this task is assigned to the function of Data Menu (Fig. 2).



```

Меню
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Введите ФИО - ...
Количество членов семьи - ...
Наличие инвалидности - ...
Статус работоспособности родителя - ...
Уровень прожиточного минимума - ...
Иные льготы - ...

```

Fig. 2. Program menu overview

Such functions are based on Condition Operators – IF, ELSE, THEN, etc. Data is written to the required cells by indexing, in our case through  $i$ . For this period work is carried out to organize data in table form [2].

*Conclusion.* The results given in the article can be applied and even targeted for use in state structures, as an auxiliary tool for informing the population of the Repub-

lic. The complete digitalization of such services is the main indicator of the stable economy of the state in the twenty-first century.

Among the remaining tasks can be mentioned works on the program code, namely improvement of harmonization between in indices and final documentary works on dissertation work of the master. A proper usage manual is planned for maintenance purposes.

At the end, I would like to note that this idea is well aligned with the State program «Digital Kazakhstan» in the section of digitalization of infrastructure [3].

### *Список литературы*

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