USING PYTHON FOR VISUAL REPRESENTATION OF ECONOMIC ISSUES

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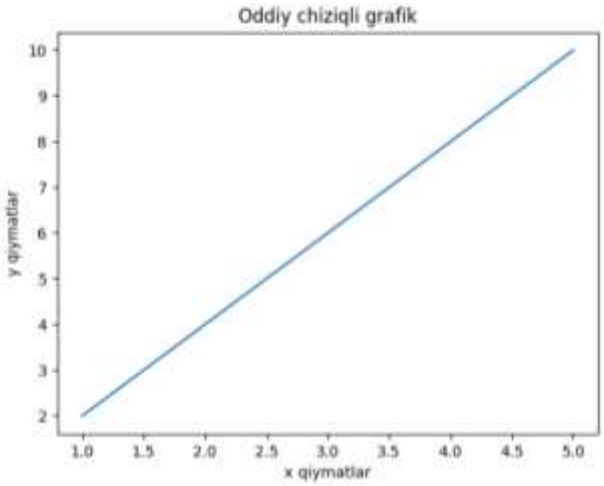
Abstract: *Python, graph, diagram, library, histogram. In order to draw graphs and diagrams in Python, it is first necessary to install the required libraries.*

Installing the library: Open the command prompt by pressing the Windows+R keys, type “cmd”, and press “Enter”. In the opened window, type “pip install matplotlib” and “pip install matplotlib.pyplot as plt”. This will install the library.

Then, open a new window in IDLE and write:

```
import matplotlib.pyplot as plt
x = [1, 2, 3, 4, 5], y = [2, 4, 6, 8, 10]
plt.plot(x, y)
plt.xlabel("x values")
plt.ylabel("y values")
plt.title("Simple line graph")
plt.show()
```

Based on the above data, the program will generate a graph.



Drawing such graphs in Python is important for plotting regression graphs and evaluating errors.

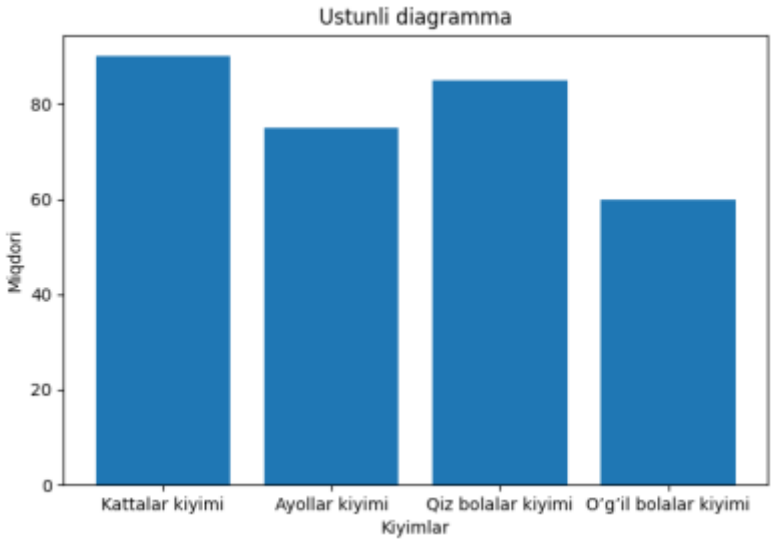
In visualizing data, diagrams play a key role. Diagrams can be in the form of bar charts or pie charts.

Drawing a bar chart in Python: Representing data in the form of a bar chart is carried out in the following sequence. Let us consider this with a practical example.

Suppose a company produces four types of products in one day in the following quantities: 90 units of “Men’s clothing”, 75 units of “Women’s clothing”, 85 units of “Girls’ clothing”, and 60 units of “Boys’ clothing”. To represent this data as a bar chart in Python, the following code is entered:

```
import matplotlib.pyplot as plt
```

```
Clothes = ["Men's clothing", "Women's clothing", "Girls' clothing", "Boys' clothing"]
Quantity = [90, 75, 85, 60]
plt.bar(Clothes, Quantity)
plt.xlabel("Clothing types")
plt.ylabel("Quantity")
plt.title("Bar chart")
plt.show()
```

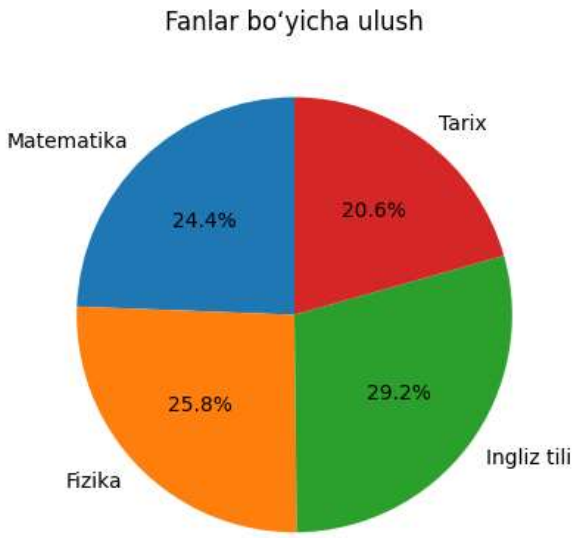


Drawing a pie chart in Python:

Let us consider how to draw a pie chart in Python using the following example.

Suppose we are given the following data about a student's scores in several subjects: Mathematics (71 points), Physics (75 points), English (85 points), and History (60 points). The representation of this data as a pie chart is as follows:

```
import matplotlib.pyplot as plt
subjects = ["Mathematics", "Physics", "English", "History"]
scores = [71, 75, 85, 60]
plt.pie(scores, labels=subjects, autopct="%1.1f%%", startangle=90)
plt.title("Distribution by subjects")
plt.show()
```

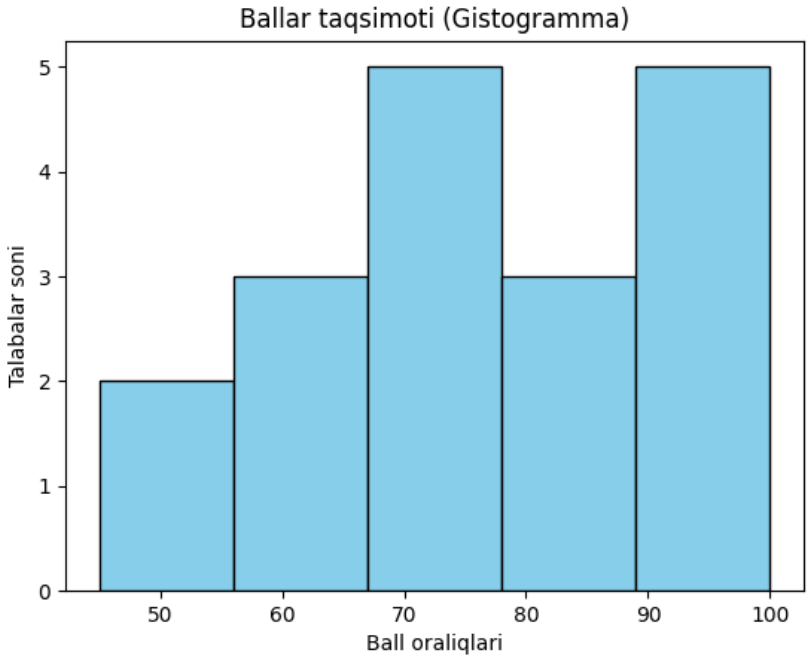


Drawing a histogram in Python:

A histogram is a form of data visualization that is similar to a bar chart. Let us consider drawing a histogram based on the following data.

Suppose we are given the scores of 18 students in a single subject. Based on this data, we can draw a histogram. The scores are: 56, 67, 45, 80, 90, 77, 65, 89, 92, 55, 60, 73, 85, 78, 95, 100, 68, 74.

```
import matplotlib.pyplot as plt
scores = [56, 67, 45, 80, 90, 77, 65, 89, 92, 55, 60, 73, 85, 78, 95, 100, 68, 74]
plt.hist(scores, bins=5, color="skyblue", edgecolor="black")
plt.title("Score distribution (Histogram)")
plt.xlabel("Score intervals")
plt.ylabel("Number of students")
plt.show()
```



A histogram is a type of chart that represents data in the form of a distribution. In this case, the maximum and minimum values are taken, and this interval is divided into several parts using the following formula:

Interval width = (x_max - x_min) / (number of intervals)

In practice, if the number of intervals is too small, the graph will have wide intervals. If it is divided into too many intervals, there will be too many bars and the true distribution will not be clearly visible. Therefore, Python automatically selects the number of intervals. This can be done by entering the following code:

```
plt.hist(data, bins='auto')  # orplt.hist(data, bins='sturges')
```

REFERENCES:

1) S. Rasulov, G. M. Raimova, X. K. Sarimsakova “Ehtimollar nazariyasi va matematik statistika”, O’zbekiston faylasuflari milliy jamiyati nashriyoti, Toshkent-2006.

2) Thomas Haslwanter “An introduction to Statistics with Python” Springer International Publishing Switzerland 2016.

3) Tursunov A. Statistika tahlilida Python dasturidan foydalanish, INTERNATIONAL SCIENTIFIC AND PRACTICAL CONFERENCE, “SYSTEM ANALYSIS AND MODELING IN ECONOMY AND INTERNATIONAL RELATIONS”, January 15, 2026 UWED Tashkent Uzbekistan.

4) Nargiza, O., & Diyora, A. (2025). Building a theoretically informed uzbek-english speech recognition system: practical implementation and evaluation. Great britain-scientific review of the problems and prospects of modern science and education, 1(8), 36-41.

5) Tozhibayev, Bahromjon, and Saidulla Isokov. "Youth Social Deviation in the Process of Reforms in Uzbekistan." IX International Scientific and Practical Conference “Current Problems of Social and Labour Relations"(ISPC-CPSLR 2021). Atlantis Press, 2022.

6) Sobirjonovich, Isoqov Saydullo. "Considerations of Education as a factor of social mobility in Uzbekistan." (2023).

7) Жураев, Жамшед Рахматиллоевич, Сайдулла Собиржонович Исоков, and Шавкат Куранбаевич Яхшибоев. "Фалсафа доктори (PhD) илмий даражасини олиш учун ихтисослик буйича малакавий имтихон топширувчи талабгорлар РУЙХАТИ." Социология 22: 01.

8) Sherzodbek, N. (2025). Til o'rganishda motivatsiyaning roli: ichki va tashqi omillar. yangi o ‘zbekiston, yangi tadqiqotlar jurnali, 2(5), 470-474.

9) Ziyoda, Qozoqova, Abdulahatova Madina, and Gulomjonova Madina. "Gipertoniyani aniklashda xamshiraning vazifasi." Лучшие интеллектуальные исследования 56.1 (2025): 296-300.

10) Akhmadaliyev Ulug‘bek o‘g, Murodjon. "Model for Preparing Future Teachers Based on Contemporary Trends: An Analysis Grounded in Talis-2024 Results."

European Index Library of European International Journal of Pedagogics 6.03 (2026): 67-75.

11) Murodjon Ulug'bek o'g, Axmadaliyev. "Nutq madaniyati va undagi milliy urf-odatlarning aks ettirilishi." образование наука и инновационные идеи в мире 83.3 (2025): 323-330.

12) Murodjon Ulug'bek o'g, Axmadaliyev. "Onlayn ta'limning kamchiliklari va afzalliklari." TADQIQOTLAR 76.3 (2025): 3-7.

13) Kasym-Hojaev, I., Kamalova, G., Negmatshaeva, H., & Khankeldieva, H. (2015). Comparative dynamics of uterine echo dimentions in health and secondary amenorrhea. European Medical, Health and Pharmaceutical Journal, 8(1).