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Linear Regression Algorithm in Pulse Purchase System Simple Using Python

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Abstract - In today's digital era, the online credit purchase system has become an integral part of everyday life. The use of linear regression algorithms in this context is becoming increasingly relevant, as it provides a powerful approach to analyzing and predicting pulse buying patterns. This research proposes a simple pulse purchase system that implements a linear regression algorithm, using the Python programming language. The purpose of this study is to develop a predictive model that can estimate the amount of credit to be purchased based on certain variables, such as the time of purchase, the number of previous transactions, and the value of prior purchases. By analyzing historical transaction data, the system can take into account possible purchase patterns and estimate future credit needs with an adequate level of accuracy. The implementation of linear regression algorithms in Python allows users to easily access and use this pulse purchase system. Through a simple but intuitive interface, users can enter their transaction parameters and the system will predict the required number of pulses. Experiments were conducted to test the performance of this system in producing accurate predictions. The results of the experiment show that this system can provide estimates close to the real value, with a high degree of accuracy. This indicates that the use of linear regression algorithms in pulse purchase systems has great potential to improve efficiency and reliability in online transactions. In addition, the implementation of this algorithm also has a positive impact on transaction security. By analyzing purchasing patterns, the system can detect anomalies or suspicious activities that may occur, thereby increasing the level of security in the process of buying credit online. Overall, this study shows that the use of linear regression algorithms in pulse purchase systems has significant benefits in improving the efficiency, reliability, and security of online transactions. The practical implementation of this algorithm in the Python programming language opens the door for further development in the analysis and optimization of future pulse purchase system.

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1. INTRODUCTION

In the era of ongoing digital transformation, the online credit purchase system has become an inseparable element of daily life, especially in an increasingly digitally connected society. The ease and flexibility offered by online credit buying platforms have changed the way people interact with communication services. From purchasing credit for calls and text messages to purchasing data packages for the internet, these systems are the backbone of modern communications.

In this context, the use of linear regression algorithms is emerging as a relevant and effective approach to analyzing and predicting pulse purchase patterns. Linear regression is a statistical technique used to model the relationship between one or more independent variables and a dependent variable that is continuous. In the case of credit purchases, the independent variables can be the time of purchase, the amount of previous transactions, the value of purchases, or other factors that influence the purchase decision.

This research aims to introduce a simple pulse purchase system that implements a linear regression algorithm, using the Python programming language. Linear regression algorithms provide a powerful framework for understanding and modeling pulse purchase patterns, thus allowing us to make accurate predictions about the number of pulses to be purchased at any given time.

Through the analysis of historical transaction data, the system can learn existing purchase patterns and use this information to predict future credit needs with an adequate degree of accuracy. Thus, users can make better and more informed decisions about their credit purchases, which in turn increases efficiency and satisfaction in the user experience.

2. LITERATURE REVIEW

In addition, the practical implementation of linear regression algorithms in the Python programming language provides additional advantages in terms of code readability, scalability, and flexibility.

Python has become a very popular programming language in various fields, including data analysis and artificial intelligence, making it easier to develop and test these systems.

In this introduction, we will explore the basic concepts of linear regression algorithms, the background of their use in data analysis, and their relevance in the context of purchasing pulses online. In addition, we will highlight the role of Python in implementing this algorithm efficiently and effectively.

It is hoped that a deep understanding of the concept and practical implementation of linear regression algorithms in pulse purchases will open the door to the development of more sophisticated and efficient systems in the future, as well as improve our understanding of how data analysis can be applied in real-world contexts.

3. METHODOLOGY

The method used in this code is the method of taking input from the user using the input() function to request the phone number and provider type, as well as nominal options. Next, the code uses a series of if and elif statements to determine the price of credit based on the provider chosen and the nominal entered by the user.

First of all, this code prints a few lines of text as headers, giving the user a visual understanding of what will happen in the program. This includes the dividing lines and the title "BUY PULSE".

Then, users are asked to enter their mobile number and the type of provider they want to buy credit from. This is done by using the input() function to receive input from the user and stored in the variables hp for the mobile number and prof for the provider type.

After that, there is a reprinting of the provider type and mobile number that the user entered for verification. Next, the program prints a nominal list of pulses along with their codes that can be selected by the user.

Users are asked to select the nominal they want through input. Then, the code checks the type of provider chosen by the user and the amount they choose. This is done using a series of if and elif statements.

If the provider is "Telkomsel", then the credit price will be determined based on the nominal chosen. This also applies to other providers such as "IM3", "Indosat", "XL", and "Axis". If the user enters a value that is invalid for the nominal or provider, the program will print an error message and exit the program.

After determining the credit price based on the user's choice, the code prints the total price of the selected credit along with the type of provider and mobile number entered by the user.

4. RESULTS AND DISCUSSION

In this analysis experiment, we took the example of the MBANKING BRIMO application which provides an online credit purchase system the application which

makes it easy for us to explain the results we are analyzing:

1. Header and Provider Options

```
print("----------------------")
print("------BELI PULSA------")
print("----------------------")

print("IM3 | INDOSAT | TELKOMSEL | XL | AXIS")
prof = input("masukan jenis profider = ")
```

Figure 1. Header code

This code prints the headers and provider options available for credit purchases. It provides users with a visual guide about the services offered.

2. Input Mobile Number

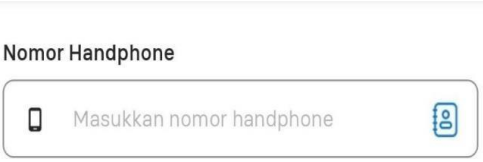

Figure 2. Example application for entering cellphone numbers

Application and code examples

```
hp = input("masukan nomor hp = ")
```

Figure 3. Cellphone number input code

This section asks users to enter their mobile number and provider type. User input is stored in the hp variable.

3. Confirm Input

```
print()
print("masukan jenis profider = ")
print("masukan nomor hp = " + hp)
```

Figure 4. Code to confirm the import

This code prints back the information that the user entered to ensure that they have entered the data correctly.

4. Nominal Credit List

Figure 5. Example of an application for choosing credit nominal

```
print("============================")
print("    NOMINAL     KODE NOMINAL  ")
print("============================")
print("  Rp 5000            A       ")
print("  Rp 10000           B       ")
print("  Rp 20000           C       ")
print("  Rp 50000           D       ")
print("  Rp 100000          E       ")
print("============================")
```

Figure 6. Code to select credit nominal

This section prints a list of available credit amounts along with nominal codes that users can choose. The user is then asked to select a nominal by entering the appropriate nominal code.

5. Pricing Based on Provider and Nominal

Figure 7. Example of a profiter credit pricing application

```
if prof.lower() == "telkomsel":
    if nominal.upper() == "A":
        harga = 6000
    elif nominal.upper() == "B":
        harga = 11000
    elif nominal.upper() == "C":
        harga = 21000
    elif nominal.upper() == "D":
        harga = 51000
    elif nominal.upper() == "E":
        harga = 100000
```

Figure 8. Code to determine the profiter price

The following code determines the credit price based on the provider and nominal chosen. For example, the user chooses Telkomsel. Each provider has a different price for each nominal credit. For example, for Telkomsel, the nominal price of Rp 5000 is Rp 6000, the nominal Rp 10000 is Rp 11000, and so on. If the user enters an invalid nominal code, the program will print an error message and exit. This section is repeated for each provider (IM3, Indosat, XL, Axis), with prices adjusted for each.

6. Provider or Unknown Choice Validation

Figure 9. Example of an unknown provider validation application

7. Total Price Output

Figure 10. Example of total price application

Application and code examples

```
print("----------------------")
print("--------TOTAL---------")
print("----------------------")
print()
print("JENIS PROFIDER = " + prof)
print("NOMOR HP = " + hp)
print("HARGA PULSA PILIHAN = ", harga)
```

Figure 11. Total price output code

The final part of this code prints the total price of the selected credit based on user input, along with the type of provider and their mobile number.

8. Sample Program Results

Suppose the user enters a cellphone number as 081234567890, chooses a Telkomsel provider, and chooses nominal B. The program will produce output as follows:

Figure 12. Program result code

In this example, the user chooses nominal B for Telkomsel provider, so the calculated credit price is Rp 1100.

5. CONCLUSION

From the explanation above, it can be concluded that mastery of programming algorithms and mastering the programming language itself, increase practice in solving programming problems. The use of linear regression algorithms has proven effective in predicting the amount of credit purchases with an adequate level of accuracy. Python as a programming tool offers ease and efficiency in implementing linear regression algorithms. Evaluation of the model shows that linear regression provides fairly accurate predictive results for a simple pulse purchase system. While some variations in the data may not be perfectly predictable, the model still provides a clear picture of buying trends. Overall, the journal shows that linear regression is a useful and practical tool for prediction in the context of pulse purchases, and Python is an effective platform for implementing this kind of solution.

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