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WLM CRYPTOCURRENCY USING BINOMIAL AND POISSON DISTRIBUTION IN PYTHON

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ABSTRACT

In this paper, we discuss the WLM digital crypto currency using binomial and poisson distribution in Python . Our analysis is based on probabilities of successes and failure, gain or losses using binomial and poisson probability distribution. For solving these distributions ,the new algorithm are introduced based on the Python**.**

Keywords: Poisson distribution, Binomial distribution.

INTRODUCTION

The coin's initial offering price is 0.20 USD.Circulation of wlm digital currency in www.crypto.com. The market capitalization of the new digital currency or the market price multiplied by units is expected to be 800 trillion over 7 years. we expect to see a huge increase in price in the first 7 years due to the interaction of traders and cryptocurrency mining In addition, we forecast a 1000 percentage increase in

the total market capitalization over the period 2023-2030.

The Poisson distribution can be used alone or as an approximation to

the binomial distribution when the number of attempts n is very large and the probability of successes P is very small. Conversely, the binomial distribution can be derived from that has only two possible outcomes such as success or failure, profit or losses.

A cryptocurrency is a digital currency that is represented by an encrypted data string. A peer-to-peer network as a blockchain, which also serves as a secure log of transactions, is in charge of monitoring and organising it. Blockchain is the technology that allows cryptocurrencies to exist. The well-known cryptocurrency, Bitcoin, is the one for which blockchain technology was created. A cryptocurrency, like the US dollar, is a digital means of exchange that uses encryption techniques to manage the creation of monetary units and verify the transfer of funds.

PRELIMINARIES

BINOMIAL DISTRIBUTION:

A random variable X denoting the number of successes in an outcome of a binomial experiment having n trials and P as the probability of success in each trial is called binomial random variable .Its probability mass function is given by

$$P(X=x) = nC_x\, p^x \;\; q^{n-x}$$

POISSON DISTRIBUTION:

The poisson distribution is used to show how many times an event is likely to occur over a specified period and find the probability of a designated number of successes per unit of time.

$$P(X) = \frac{\mu^X \quad e^{-\mu}}{X!}$$

ALGORITHM

Algorithm for Poisson distribution:

```
import math
```

```
deals
mean
factional
i
number
while(i<number):
   factional=factional*i
i=i+1
ProbabilityofDeals=pow(mean,deals)math.exp(-mean)/5040;
print("ProbabilityofDeals:",ProbabilityofDeals)
```

Algorthim for Binomial distribution :

```
n
factorial2
factional3
p
q
ProbabilityofTwo=factorial2*(pow(p,2)*pow(q,1))
ProbabilityofThree=factorial3*(pow(p,3)*pow(q,0))
Sum=ProbabilityofTwo+ProbabilityofThree
Mean=n*p
SD=n*p*
StandardDeviation=SD**0.5
print("ProbabilityofTwo:",ProbabilityofTwo)
print("ProbabilityofThree:",ProbabilityofThree)
print("Sum:",Sum)
print("Mean:",Mean)
print("StandardDeviation:",StandardDeviation)
```

Numerical Illustration :

Poisson distribution:

1.An MD investment company receives,on number of five deals per day. To find the probability of receiving no deal in one particular day? To find the probability of seven deals in one day?

$$P(7) = \frac{5^7 \ e^{-7}}{7!} = 0.1044$$

Proposed algorithm for Poisson distribution using Python :

```
import math
deals=5
mean=3
factional=5
i=5
number=0
while(i<number):
   factional=factional*i
i=i+1
```

```
ProbabilityofDeals=pow(mean,deals)math.exp(-mean)/120;
print("ProbabilityofDeals:",ProbabilityofDeals)
```

OUTPUT:

Probability of deals = 0.104444862957054

Binomial distribution:

1.(a) Over a long period of time , three quarters of all applicants have succeeded to record gains in the crypto currency business .What is the probability that ,if three customers do transactions , at least two will record gains?(b) Calculate the mean , standard deviation.

$$P(X) = n\,C_x\, p^x q^{n-x}$$

$$nC_x = \frac{n!}{X!(n-X)!}$$

Solution

(a) $x \geq 2$,x=2,3   n = 3, $p = {}^{3}/_{4}$, $q = {}^{1}/_{4}$

$P(x \geq 2) = P(2) + P(3)$ (1)

$P(2) = 3C_2(3\backslash 4)^2(1\backslash 4)^{3-2}$ (2)

$3C_2 = \frac{3!}{2!(3-2)!} = 3$ (3)

From (3) equation (2)

$P(2) = 3\,(3\backslash 4)^2\,(1\backslash 4)^1$

$P(2) = 0.421875$ (4)

$P(3) = 3C_3(3\backslash 4)^3(1\backslash 4)^0$ (5)

$3C_3 = \frac{3!}{3!(3-3)!} = 1$ (6)

From (6) equation(5)

$P(3) = 1(3\backslash 4)^3\,(1)$

$P(3) = 0.421875$ (7)

From (4) and(7) equation(1)

$P(x \geq 2) = 0.421875 + 0.421875$

$P(X \geq 2) = 0.84375$

(b) Mean = np

= 3(3/4)

= 2.25

Standard deviation $\sigma = \sqrt{npq}$

$$\sigma = \sqrt{3\left(\frac{3}{4}\right)\left(\frac{1}{4}\right)}$$

$\sigma = 0.75$

Proposed Algorithm for Binomial **distribution using Python:**

```
n=3
factorial2=3
factional3=1
p=0.75
q=0.25
ProbabilityofTwo=factorial2*(pow(p,2)*pow(q,1))
ProbabilityofThree=factorial3*(pow(p,3)*pow(q,0))
Sum=ProbabilityofTwo+ProbabilityofThree
Mean=n*p
```

```
SD=n*p*q
StandardDeviation=SD**0.5
print("ProbabilityofTwo:",ProbabilityofTwo)
print("ProbabilityofThree:",ProbabilityofThree)
print("Sum:",Sum)
print("Mean:",Mean)
print("StandardDeviation:",StandardDeviation)
```

OUTPUT:

```
Probability of Two    : 0.421875
Probability of Three  : 0.421875
Sum                   : 0.84375
Mean                  : 2.25
StandardDeviation     : 0.75
```

Proposed algorithm of the hashrate of blockchain WLM digital cryptocurreny :

```
date=200921
index=1000
amountPaid=20000
timestamp=24
data=5000
precedingHash=1000000
quantity=50
Mano="sender"
John="recipient"
date2=210921
index2=500
amountPaid2=15000
timestamp2=24
data2=5000
precedingHash2=1000000
quantity2=100
Anne="sender"
Mani="recipient"
date3=220921
index3=500
amountPaid3=10000
timestamp3=24
data3=5000
precedingHash3=1000
quantity3=1000
Ram="sender"
```

```
Alex="recipient"
hashRate=index+timestamp+data+precedingHash+quantity+amountPaid
hashRate2=index2+timestamp2+data2+precedingHash2+quantity2+amountPaid2
hashRate3=index3+timestamp3+data3+precedingHash3+quantity3+amountPaid3
print("date:",date)
print("index:",index)
print("timestamp:",timestamp)
print("data:",data)
print("precedingHash:",precedingHash)
print("quantity:",quantity)
print("amountPaid:",amountPaid)
print("Mano:",Mano)
print("John:",John)
print("date2:",date2)
print("index2:",index2)
print("timestamp2:",timestamp2)
print("data2:",data2)
print("precedingHash2:",precedingHash2)
print("quantity2:",quantity2)
print("amountPaid2:",amountPaid2)
print("Anne:",Anne)
print("Mani:",Mani)
print("hashRate2:",hashRate2)
print("date3:",date3)
print("index3:",index3)
print("timestamp3:",timestamp3)
print("data3:",data3)
print("precedingHash3:",precedingHash3)
print("quantity3:",quantity3)
print("amountPaid:",amountPaid)
print("Ram:",Ram)
print("Alex:",Alex)
print("hashRate3:",hashRate3)
```

OUTPUT:

```
date:200921.0
index:1000.0
timestamp:24.0
data:5000.0
precedingHash:1000000.0
quantity:50.0
amountPaid:20000.
```

Mano:sender

John:recipient

hashrate:1021074.0

date2:210921.0

index2:500.0

timestamp2:24.0

data:5000.0

precedingHash2:1000000.0

quantity2:100.0

amountPaid2:15000.0

Anne:sender

Mani :recipient

hashRate2:1015624.0

date3:220921.0

index3:500.0

timestamp3:24.0

data3:5000.0

precedingHash3:1000.0

quantity3:1000.0

amountPaid:10000.0

Ram:sender

Alex:recipient

hashRate3:19524.0

CONCLUSION

In this paper, algorithm are proposed based on the python programming for solving the distribution .Numerical illustration were proposed for finding the solution of the given distribution. And also comparison were made by the numerical solution and python program both solutions are same.

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