Nit Coins – Bit Coins in NITTE

Akshatha K*

Mohsin Ahmed*

Abstract

In this article we describe a new system for using digital currency called Nitcoins. It is similar to Bitcoins and is suitable for an Institute of higher education. We describe a setup where students can learn about auditing, accounting, interest rates, investments, cash flow, security, privacy, profitability and savings by running Nit Coin servers in the college Nitcoins can be used as a digital currency in a leave trading system to track attendance and manage absentees.

Keywords: Digital currency, Bitcoins, attendance, LMS, Attendance

INTRODUCTION

Nitcoins is our proposed online payment system similar to Bitcoin, to be used in our college as distributed authenticated digital money. *Schneier (1996)* describes the necessary cryptographic protocols to implement the system. Nitcoins will be based on the popular Bitcoin system, with changes suitable for learning about money control and finance in an academic environment.

We first describe the Bitcoin system, show its popularity, then we discuss its advantages and disadvantages. We then propose our Nitcoins system, with changes to over the problems in Bitcoins. We then describe the operational details of Nitcoins, its advantages and disadvantages.

Bitcoins

Bitcoin is an anonymous distributed digital payment system, with no central authority. Bitcoin payments are recorded in a public ledger using its own unit of account. It is digital currency in which transactions can be performed without the oversight of a central bank. Normally Bitcoins can be used to buy merchandise anonymously. There are several market places called 'Bitcoin exchanges', which allows people to buy or sell bit coins using different currencies. As we can see from Figures 1 and 2, the use of Bitcoins across the world and in interest India has skyrocketed in the year 2014. We also see some wild fluctuations in 2014 in the price of bitcoins because of uncertainly of its legality and long term value. For Indians hoarding black money it is particularly tempting because it is portable across the world and anonymous.

Disadvantages of Bitcoin, anonymous digital money

Our system overcomes the problem of the Bitcoin system mentioned below, by restricting users to a known set and using digital signatures to cross verify users and servers.

*Student, Justice K S Hegde Institute of Management, NITTE 574110, India. akshubalike66@gmail.com
** Professor, Justice K S Hegde Institute of Management, NITTE 574110, India. moshahmed@gmail.com
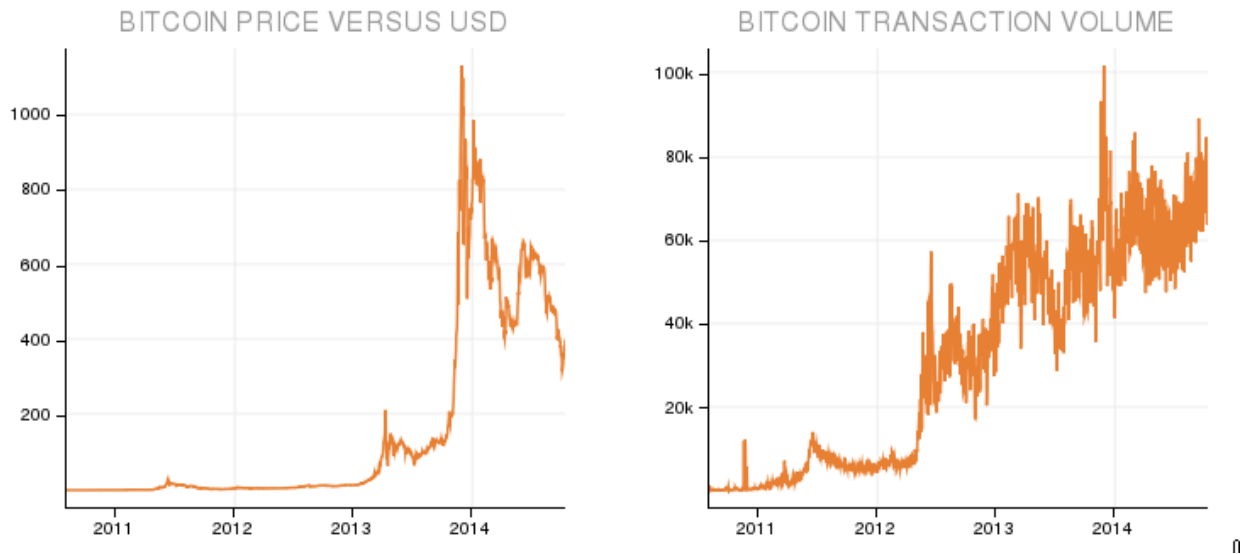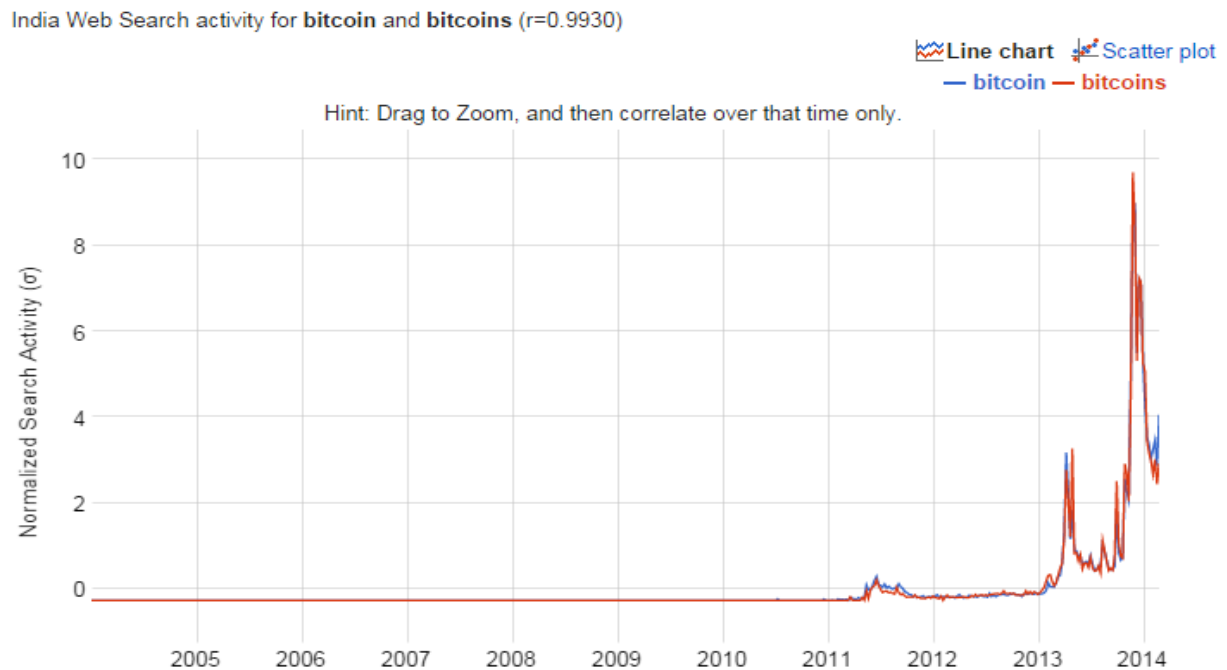
Figure 1 *Bitcoin Statistics 2014*

BITCOIN PRICE VERSUS USD

BITCOIN TRANSACTION VOLUME

Figure 2 *Bitcoin query volume 2014* from Google India

India Web Search activity for **bitcoin** and **bitcoins** (r=0.9930)

~~Line chart~~ ~~Scatter plot~~
— bitcoin — bitcoins

Hint: Drag to Zoom, and then correlate over that time only.

The main drawback of Bitcoin system is that, it is unregulated and may result in untraceable (black) money; this can affect the growth of the economy and be a security hazard for a country.

There are several highly publicized problems with bitcoins. Mt.Gox Bitcoin exchange went down in 2/2014 (Bitcoin statistics, 2014), and users lost 800,000 bitcoins in the exchange. It is impossible to track the owners of this exchange. Similarly the Silk Road website that allowed users with a Tor browser and bitcoins to anonymously buy and sell online, was shut down by FBI in 10/2013 because of illegal items being sold on it.

Nitcoins Operations

First we need to download the Bitcoins software. Then there are two main components in this software viz.1. Bitcoin address 2. Private key. The private key is per user, and must be kept secret with the user.

The new idea is to introduce this system of bitcoins to JKSHIM with the control system which was not there in bit coins system. As in bit coins, we allow student servers (miners) to audit transaction logs.

JKSHIM servers will have CA signed certificates, so its users can rest assured that the server is authentic. Each user will have to generate a private key and public key. The public key will be signed by college, so in all digital transactions the user id cannot be spoofed.

Present situation in the college

Every lecturer is supposed to take attendance in their respective classes. Cut off attendance for a student is 85%. Each student is given with limited number of coupons. Students should provide one each coupons for every their absenteeism. As it is mentioned above only limited number of coupons issued, if a student finishes all his coupons, he can borrow or buy coupons from other students for money. Coupons will be traded in the open market. Coupons rates will be fixed based on the demand and supply of coupons. Sometimes when there is high demand for the coupons, coupon rate may go high and vice versa. Each class representatives handle the system of leave trading coupons.

Bit coins in Nitte will be called Nitcoins

Now the plan is to introduce bit coin system to this trading of leave trading coupons. Normally students will not trade much in the market even if they are interested because they don't feel good to trade with their own friends. One more disadvantage is that, when the coupons are traded for very small amount, inconvenience arises. For example, if the coupon amounts to 5.5 Rs, 0.50 paisa is the inconvenience for the students. In order to remove all these inconveniences, new system called NIT COINS can be introduced.

Operational Details

Transactions will happen through cell phones in which the required software is installed. This system involves use of private keys which will be kept secretly. There will be main server to control the transactions. Prices of the coupons should be entered to the server. Main server records all the transactions in the names of every student. Students will not come to know by whom they are going to purchase or sell coupons; it helps to protect the privacy of the students. Server itself settles all the transactions time to time i.e. debt and gains of the students.

Since transactions are logged, misuse of private key can be tracked by ip-address or IME numbers in the transactions. This allows the students to do some forensic work and also learn about the protecting privacy of data in general.

Cost of running the system

The software to deal with bit coins will be available at free of cost. But that available software doesn't provide the provision of control system. So after downloading the software, we need to alter some of its functions. Mainly separate provision of control system should be provided. For this institution can go for specialists to alter the software. Consideration for the specialist may not cost more. It will be reasonable amount only. As adaptation of Bitcoin system in the leave trading system has many advantages, all the costs should be borne by the institution itself. No extra cost should be charged to the students.

Financial modeling

The system needs to dynamically price the Nitcoins, to balance the demand and supply. The finance students can try different algorithms to calculate and even predict prices. This allows them to learn about stock trading and speculation without undue loss of money.

In the tradition of banking systems (and unlike bitcoins), Nitcoins may print currency to meet demand and see how over-printing of currency can lead to runaway inflation (devaluation of Nitcoins).

The system can also allow "futures" and "option trading", allowing users who want to trade coins in the future by locking on the current prices provided there are buyers and sellers for such speculation.

Benefits of Nit coins

Application of new method of payment: When the technology grows, we need to adapt new technologies time to time. Otherwise we can't survive in this competitive world. Earlier most paper work was done manually, but over the years new and attractive technologies came into existence especially with computerization, and we have adapted to that. For example, the introduction of computerized banking system has opened new doors in banking like ATM machines everywhere and mobile cash in Africa.

Likewise, here the suggestion is to adapt new system in the institute to withstand uniquely among other educational institutions. It helps to gain reputation by the people.

Even the small amount will be traded easily: When students trade among themselves, there is a chance of adjusting small amount i.e. rounding off the amount – 3.5 Rs may be rounded off to 4 Rs. In such cases, for the seller it's a loss of 0.5 Rs. Even if he is uncomfortable to pay extra 0.5 Rs, he has to pay.

But in case of Nit coins, as we know the amount will be accumulated, there is less chance for these kinds of inconveniences. Amounts will be recorded in the name of a particular student and at the end of his academic year he has to settle his obligations if any or he gets profits if any.

Saves time: This new system of Nit coins saves times of the students as it is done with the help of cell phones. Transactions will be finished within fractions of a second. Just clicking buy or sell transactions can be done.

Benefit of forward transaction: Even forward transaction facility can be included in this system. It can reduce future uncertainties of the students. Students can quote required price for the future date. To do these kinds of transactions they need to know specific date in which they are going to be absent.

Saving habit for the students: There may be some students, who don't bunk any of the classes and be studious. Such students can sell their coupons to other students who are in need of coupons. By doing this they can save money for some extent. Sometimes students spend the

money which they get from the trading of leave trading coupons, as and when they get money. But here, in this case students will not be given their money even if they incur profits. Their profits will be accumulated in their accounts till the last day of their college life i.e. 2 years. It will be given to them only after they finish of their academic year. So at the end of the day students will be in a position to utilize their pooled money for some good purpose. In normal case students may not be in a position to recall for which purpose they spent that gained profit. But in the new system, students can invest that accumulated money in shares and earn good returns.

User friendly: We all are familiar with smart phones. We use it daily to chat in *Whatsapp*. We are eager to use our smart phones. As this new system will be operated via smart phones, it will be user friendly for the students. We just need to open our cell phone, see the app screen in which selling and buying options will be visible, and touch our requirements to effect the transactions.

Reputation to the institute: Application of Nitcoins in the Institute may help to get a better reputation. It acts as 'value-added' product to the institute. Good name and reputation results in more and more students preferring to join this institute. Overall it may result in getting profits to the institute.

Disadvantages of Nitcoins

Implementation requires time: Implementation of this new system may take some period. Implementation should be perfect otherwise transactions may go wrong. It needs specialists in technology, fortunately many open source packages are available to jump start the process.

Cost: Full cost should be paid by the institution itself. If institution charges every student, students may not agree to adapt this new system. Students may prefe old system of trading of trading face to face with cash.

Conclusion

As we have seen above that there are more benefits in this system rather than problems. There is a chance for the Institute to learn and to adapt new type of modern payment system internally, which acts as 'value added' to the institute.

Acknowledgements

References

Schneier, Bruce, "Applied Cryptography: Protocols, Algorithms, and Source Code in C", Wiley; 2nd edition, 1996.

Bit coin statistics, Retrieved on Oct 3, 2014, from Quandl
http://www.quandl.com/c/markets/bitcoin-data

Silk Road marketplace, Retrieved on Oct 3, 2014 from Wikipedia,
http://en.wikipedia.org/wiki/Silk_Road_(marketplace).

Bitcoin query volume, Retrieved on Oct 3, 2014, from Google
http://www.google.com/trends/correlate/search?e=bitcoin&t=weekly&p=in

Bitcoin Wikipedia entry, Retrieved Oct 3, 2014, from Wikipedia,
http://en.wikipedia.org/wiki/Bitcoin