UKRAINIAN CATHOLIC UNIVERSITY

BACHELOR THESIS

Development of a payment tool for viewing Ads based on BlockChain

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Declaration of Authorship

I, Kateryna MOHYLEVSKA, declare that this thesis titled, "Development of a payment tool for viewing Ads based on BlockChain " and the work presented in it are my own. I confirm that:

- This work was done wholly or mainly while in candidature for a research degree at this University.

- Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated.

- Where I have consulted the published work of others, this is always clearly attributed.

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- I have acknowledged all main sources of help.

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Signed:

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Date:

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Development of a payment tool for viewing Ads based on BlockChain

by Kateryna MOHYLEVSKA

Abstract

First of all, I'll tell you how I chose this topic. It all started with the lessons of the blockchain. I was very interested in this topic which Ivan Kohut proposed for the final project on this subject. But unfortunately, together with the team, we decided that we had too little time to implement this idea. Therefore, when choosing a topic for my thesis, I still wanted to work on this topic. I liked the fact that no one has yet embodied this idea. I think many Internet users are annoyed by ads that pop up from all corners of the site. I understand that now this advertisement is the most productive and this area of marketing will progress and in the near future we will not be able to save sites from advertising. For this reason I would like to see the advertisement cause at least some positive emotions as it will bring a minimum income. You can find source code on GitHub.

Acknowledgements

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List of Abbreviations

BTC	**B**it**c**oin
P2P	**P**eer-**T**o-**P**eer principle
LND	**L**ightning **N**etwork **D**aemon
SHA	**S**ecure **H**ash **A**lgorithm
FFA	**F**lat **F**ee **A**dvertising
CPA	**C**ost **P**er **A**ction

To my loved parents...

Chapter 1

Introduction

1.1 Context

Today financial systems of individual countries are improving and progressing in the context of the development of globalization, the spread of IT technologies and general computerization. It promotes the emergence of new financial institutions, tools and forms of interaction between people. As a result there was created an analogue of traditional currencies - cryptocurrency and its most common currency Bitcoin. And I would like to this new technology with an essential long-standing part of any business and I'm talking about advertising because it is the most powerful tool for the promotion of any business. You might have a great product or service, but without the ability to show it off to other people, you may as well not exist. In the modern realities of the information society, advertising is undergoing changes, and it keeps up with the times. The ways of its presentation, used a few years ago, today, have much lower efficiency and modern reality requires much more sophisticated forms of integrating advertising into the daily life of a person. Without the means of promoting various goods and services there would not be a huge number of brands whose products and services facilitate, improve our life, and make it more beautiful. That's why my bachelor thesis associated with advertising. In order to always be in trend, create interesting, unique and popular advertising projects, you need to follow the development of advertising. Of course, advertising is a reflection of modern society and life. Therefore, all changes in this area are associated with the rapidly developing world of technology.

1.2 Problem

Internet advertising is a whole world filled with complex algorithms and analytical systems. And, as is often the case, systems do not always work as they should.

Internet users ignoring banner advertising, which can be carried out both consciously and unknowingly. This consciously happens when the user installs special ad blocking programs, such as "Add-Ons'. Unknowingly a person misses advertising when it is not in his field of vision, for example, on the sides of the site. Many readers simply do not pay attention to the links leading to the advertiser's site, having received the necessary information, they close the page without going to the site promoting their products. There is also a negative attitude to advertising on the Internet. Most users do not click on links in principle. A certain percentage of clicks on ads are random from the user.

1.3   My approach in a nutshell

By combining advertising with cryptocurrency, I mean the creation of a system in which each user can receive payment for viewing advertising. Thanks to this, a person will be interested in viewing advertising in a responsible manner and the effectiveness of such advertising will increase. Of course, the user will receive a very small pay-per-view, as the company that advertises its product still has to pay the site on which the advertisement will be placed. But even the minimum payment will interest any user.

Chapter 2

Related Works and background

2.1 Advertising

Today advertising is a whole science that is integrated, literally, into all spheres of human life. It is multidirectional and multifunctional, and this is what makes it so interesting and useful in the life of modern man. Product promotion and business development will be more successful if the company develops and launches efficient advertising projects. In this chapter you can learn more about history of digital advertising and its trends.

One of the most popular segment is digital advertising. It includes various graphic and text advertising materials posted on the Internet. The Internet advertising market began to take shape in the 1990s(October 27, 1994, the first online ad banner was posted), the Internet was not considered by advertisers as a priority advertising platform, although some of them already carried out Internet support for advertising their goods and services. However, the rapid development of the World Wide Web and some features of Internet advertising have led to the fact that advertisers' policies regarding the use of the Internet have changed. Since the mid-2000s, the Internet has been considered one of the main channels of information impact on consumers. Statistics confirms that 80% of shoppers/buyers do their research online before investing in a product/service (Standberry, 2018). So the presence of good advertising on the Internet is a guarantee of good product promotion.

There are several types of digital advertising, I will tell you about some of them. Contextual advertising is a text or text-graphic modules that are shown on the sites located in the context of the audience of the advertisement object, or a specific user. Contextual advertising can correspond to the thematic focus of the site where it is shown or displayed on the basis of search queries / interests of the user himself. Contextual advertisements are one of the most effective online advertising options. With its help you can achieve sales growth, attract targeted visitors to the advertiser's site. Contextual ads are shown only if the user has already shown interest in this topic, or when the advertised product corresponds to the theme of the site on which it is located and this is its biggest advantage. At the same time, payment for advertising demonstration is made by every click, that is, for a specific user action.

Advertising placed on banners is one of the first to appear within the web space. Static or animated advertising objects are aimed at attracting the attention of the audience. But to call them target is quite difficult. As a rule, banners are used to increase awareness of a product, brand, or to disseminate information about existing promotions, discounts, special offers. Among other types of online advertising, the media is distinguished by a relatively low clickability - there are not too many transitions, but they are usually targeted. And with the right choice of site, they give a good return.

Advertising in social networks. Marketing promotion of goods and services in social networks requires considerable investments. The timing of the achievement of the desired result in this case is almost impossible to predict, as well as the volume of costs. But, in general, it is an effective method of developing a brand or a web project for the long term, allowing you to interact with the target audience. Many popular social networking projects have already launched their own advertising networks, allowing them to distribute advertising within the platform, taking into account its themes and other parameters. This greatly simplifies the launch of advertising campaigns of any scale and allows you to plan not only further promotion, but also the budget of funds spent on advertising.

E-mail advertising has only recently occupied a large market share. Today, it is most often only one of the areas of work with a permanent client audience. However, if desired, it can be used quite effectively. The main thing is to approach the organization of the mailing wisely, avoiding obtrusive wording and no alternative requests.

2.1.1   Digital advertising trends

I have selected 5 main trends in Internet marketing.

1. Search ads. Google, Yahoo and other searching sites show results for any your request. Users often search for something much broader than a specific product.

2. Landing pages. Marketers use native advertising - one that fits into the content of the site, which is not blocked in browsers and to which the user's immunity has not yet developed.

3. Outstream video. This ad appeared inside some video that user watch, in text line breaks for example, or the corners of a web page.

4. Chatbots - program that can communicate with users (imitating human behavior) to achieve any goal.

5. Social network. Advertising with popular bloggers in social network. Therefore, one of the trends in 2019, according to many, will be the transition from one advertising integration to long-term cooperation. Users quickly forget which brand advertised this or that star, but if they see it all the time, they will remember, love and want to buy.(Goodwin, 2019)

2.2   Cryptocurrency

Trust is the key to any partnership. The less people trust the state and corporations, the higher the popularity of P2P platforms. The technology of cryptocurrency became revolutionary. Blockchain can be used in a wide range of fields - cloud storage, security, real estate, brokerage, medicine, fashion, media, entertainment, and even law. And I want to use the blockchain in marketing.

A cryptocurrency is a type of digital money. Elements of cryptography (digital signature based on a public key system, sequential hashing) are used to ensure the invariance of the transaction. It does not have a physical appearance, and exists only in electronic form.

Cryptocurrency circulation within the system occurs directly (P2P) - without the participation of a third part. Each of the participants is absolutely equal. No one has

any privileges, regardless of his social and financial status. The main thing of this virtual money is a decentralized open database, where information of all transactions is recorded and saved. It is not placed on any separate server or hard disk, but is divided into nodes.Active members (regular users of wallets) is supporting this system. Blocks are individual cells with recorded data. All the blocks are interconnected and turn out the chain - from this the name Blockchain comes. Communication is established by writing the hash sum of the previous block to new blocks. Because of this, it is almost impossible to change a separate block - for this it is necessary to "hack" all the blocks in the chain.

The first blockchain-based cryptocurrency was Bitcoin, which still remains the most popular and most valuable. Today, there are thousands of alternatives with various functions or specifications.

2.2.1 Bitcoin - a Peer-to-Peer Electronic Cash System

Bitcoin was created by Satoshi Nakamoto, 2008. From this name, the Bitcoin protocol was first published. He also carried out the first transaction. Bitcoin is the world's first decentralized digital currency. This currency is fundamentally different from all previously created electronic currencies and payment systems. It is not tied to any physical assets or official currencies, and the price of a digital coin - Bitcoin - is regulated exclusively by market demand and supply. Users store cryptographic keys to their own money locally on a personal computer, and conduct transactions directly with each other through a peer network, verifying through the network the authenticity of remittances. Physically, every single coin in the system has its own unique key. In the course of a transaction, the user adds the public key to the coin and signs it with his personal private key. To prevent a double coin write-off, all transactions are broadcast to other parties, and the complete list of transactions in anonymous form is stored in the distributed network. For each new transaction, the keys are checked against the list of previous transactions. In other words, BitCoin is based on the recording of cash flows using asymmetric encryption.

Transactions in the BTC network are based on the peer-to-peer principle, which means a direct transfer of funds from one user to another, without the participation of third parties and controlling bodies in the form of banks, the state, etc (see Figure 2.1).
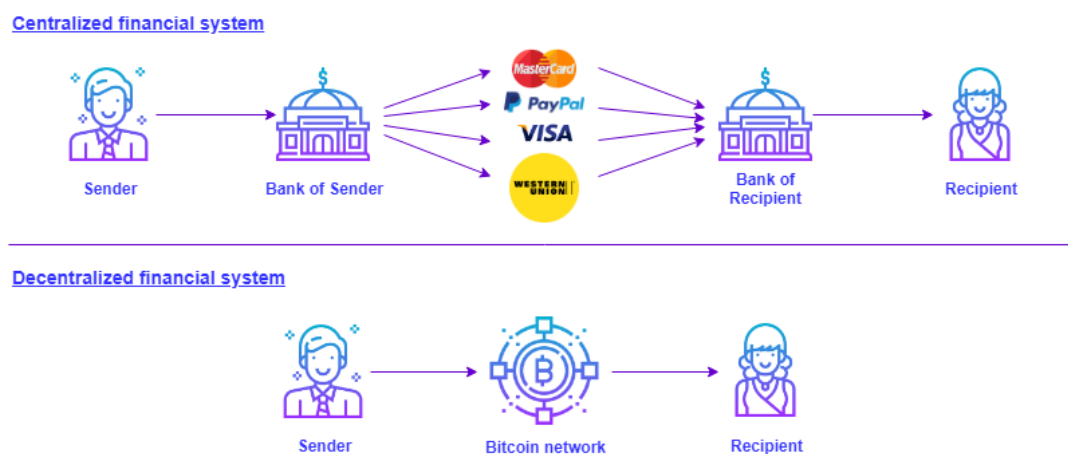

FIGURE 2.1: Traditional and New (Blockchain) transaction system

Transaction processing and emission of Bitcoins are performed collectively by network participants. Bitcoin is a project with open source code, its architecture is public, nobody owns or controls Bitcoin, and everyone can become members of the network.

Features of bitcoin:

- Decentralization

    There is no central server, bitcoin network is distributed to all users and every participant is an equal.

- Anonymity

    It is completely anonymous and at the same time completely transparent. You can create an infinite number of bitcoin addresses without binding to a name, address, or any other information.

- Transparency

    Bitcoin stores the entire history of transactions that have ever taken place. This is called a sequential chain of blocks, or blockade. Blockchain knows every-thing. Therefore, if you have a public key used bitcoin address, then anyone can see how many bitcoins you have on the account. No one will know that the address belongs to you, unless you yourself report it. Those who want a complete anonymity typically use a new bitcoin address for each transaction.

- Globality

    Bitcoin allows you to quickly carry out transactions between people from dif-ferent countries, time zones.

2.2.2   Transactions and mining

A Bitcoin transaction is a data section that is passed through the Bitcoin network and collected into blocks. Usually it contains links to previous transactions and connects a certain number of Bitcoins with public keys.

After sending the financial operation must confirm the miners. It takes time. After all, to confirm it is necessary to extract the blocks in which information about the transaction will be stored. Each block has a certain memory capacity of 1 MB. When this place is filled, the block is considered closed. Total need 6 blocks to save information about a single financial transaction.The transaction will be confirmed, when all six blocks are filled. Average speed to confirm a transfer is from 20 minutes to a full hour. The time depends on how many users took up the processing of your request, that is, the creation of blocks. For speed up a bitcoin transaction set a bit higher commission than the average for the market.

In fact, the transaction recorded in the blockchain block is more complicated, since the Bitcoin protocol operates with such concepts as Inputs and Outputs. Inputs (In) are transactions that replenish a Bitcoin address, and Outputs (Out) are sums that are transferred to other Bitcoin addresses shown on Figure 2.2

Therefore, in Bitcoin, a new transaction through Inputs (one or more) refers to Outputs (one or more) of previous transactions and forms Outputs (also one or more) for use in subsequent transactions.

Mining is the way of extracting the bitcoins, which occurs through the search of a number (hash) with certain, specified system parameters. Unlike gold mining, when it is possible to waste time and effort, and you can immediately trash a good piece, in
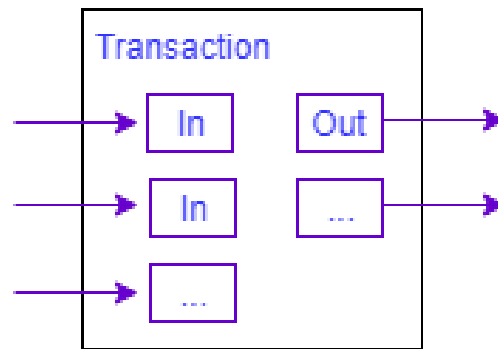
FIGURE 2.2: Combining and Splitting Value

the production of bitcoin everything is planned in advance. We do not know exactly how much gold is hidden in the depths of the Earth, but bitcoins can not be more than 21 million.

Miners on their facilities do not just solve the task of earning bitcoins, but confirm the transactions of funds within the system. It is necessary that the miners find some magic number for the every series of payments, which is waiting for its turn. And it is possible to find it only by the method of enumeration of numbers. One miner, even if he has a large and powerful system, to find such a number is not possible. Therefore, the merging of single mines into mining pool, which is a server that expands the task of finding a hash between all the participants.

Bitcoin generation is to find a new block that will be added to the blockchain. The blockchain does not accept all blocks, but only those whose hashes begin with zero bits. Whoever finds it first will receive a reward of 25 BTC. According to the Bitcoin algorithm, the winner forms a new block, and the first transaction, which he writes, will be a creation transaction. It means that the miner is charged 12.5 BTC. Further all other transactions are added. You can verify that the block actually complies with the rules by calculating one hash.

The number of network participants may vary, but the time spent by the new unit always remains the same. The network manages to comply with it by adjusting the complexity of the hash calculations. The more zero bits are required at the beginning of the hash, the longer the computation time increases.

2.2.3 Hashing Algorithm

Bitcoin mining algorithm is a hash function that is used in solving a mathematical problem, which is to obtain a hash of the next blockchain cryptocurrency block.

The cryptographic hash function on an input receives the block with data, and produces a small, but unpredictable, output (Figure 2.3). SHA-256 splits incoming information into 512 bits or 64 bytes, cryptographically mixes it up and outputs a 256-bit hash code. It is designed so that there is no quick way to get the desired output, and you must continue to search until you find a suitable value. Bitcoin uses /citesha as such a function. Moreover, to enhance the durability of SHA-256 is applied to the unit twice and is already called double SHA-256.

In Bitcoin, the criterion of validity of a hash is a sufficient number of zeros at its beginning. Finding such a hash is as difficult as, for example, finding a car or phone number ending in several zeros. But, of course, for hash it is exponentially more difficult. Currently, the correct hash should contain approximately 17 starting zeros, which only 1 of $1.4 * 10^{20}$ satisfies.

FIGURE 2.3: Work of hashing algorithm SHA-256

The Figure 2.4 below shows a typical block in a chain and its hash. In this example, the hash is valid and has a sufficient number of zeros at its beginning. However, this is an infrequent case, and usually the miner has to iterate over the value of the nonce field or other data available to change.
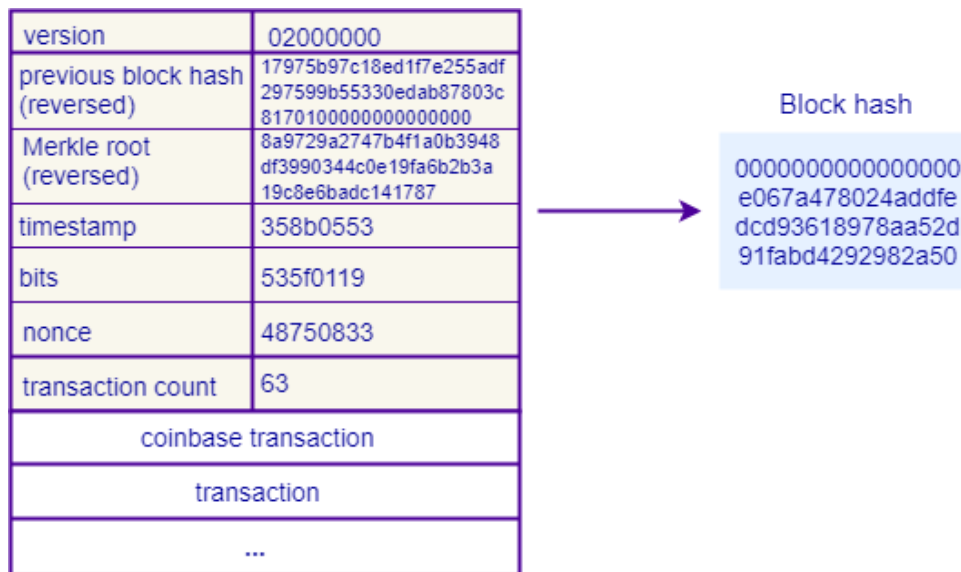

FIGURE 2.4: Structure of Bitcoin block

2.3 Lightning Network

Lightning Network is probably one of the most awaited innovations for the Bitcoin blockchain. The idea that the developers Joseph Poon and Taj Dria at 2016 would solve the problem of Bitcoin scalability and greatly speed up the transaction process. This protocol will allow users to conduct an unlimited number of micropayments outside the blockchain, thereby eliminating the problem of low bandwidth and high fees in the network.

The main idea of the Lightning Network is that not all transactions should be recorded in the blockchain, as this overloads it. Suppose users transfer funds to each other several times. Then register each translation is not required. It will be enough just to open a payment channel of some kind and record the data on its opening in the blockchain. Now this channel will remain open as long as necessary. Well, when we want to close it, then we simply write in the blockchain the result of all the transactions that were made in this channel. If you follow this idea, you can create a whole network of channels for payments and transactions in the blockchain will be used much less frequently.

The payment channels resemble a safe in which two participants were placed at an equal amount and closed with two locks, that is, each to its own. The fact of saving the amount is recorded in the blockchain and is called the opening transaction. After that, the channel for payments is considered open. The idea is that none of the participants in the network can spend money on their own and needs to be confirmed by the counterparty. It should be confirmed that money passes in transactions only between these two participants.

A payment channel is just a merger of several transactions. The channel can close any of its members. This action will be a kind of opening of the safe, which will allow to withdraw funds belonging to participants and to write down the data on their transfer to the blockchain. The similar description is schematic, but allows to understand the approximate device of the payment channel. It is difficult to assess the full potential that this technology provides, but over time the advantages become apparent. This technology looks really powerful when several similar channels are combined together in a network, which is also called The Lightning Network.

It should be noted that this decision is not without flaws. In such a network, a situation may arise when one of the nodes (node), which is an intermediary, stops responding. This can lead to the fact that the transaction will be processed up to several days and only after that it will be completed. In addition, it will not be possible to use this network for large sums transfers. The problem is that the bandwidth for each individual transaction depends on its route. The first version of the protocol even had a built-in limit, which was slightly more than 0.04 BTC.

Chapter 3

Proposed Solution

The Internet is considered a favorable environment for conducting PR campaigns, if only because Internet users are prone to receiving various kinds of information, since they intentionally enter the network. In such an environment, PR people simply need to spend much more effort to create an unusual, inventive advertising that will provoke a passer-by to examine it. In this chapter I will consider the unusual tool that I am developing for advertising, what functions does it perform, what the user needs to use it.

3.1   Participants of process

Foremost define what the participants of the process will be.

1. Publisher - person, who is owner of site where will be placed advertising. He offers his advertiser a platform for ads.

2. Advertiser - person, who want to place an ad to who sells products, services or advertises his sites.

3. Viewer - person, who will view advertising

For successful transactions each member need have a Lightning Network enabled Bitcoin wallet. Payment will go through lightning channels, it allows to send and receive from incredibly small to huge amount of Bitcoin within seconds.

3.2   Interaction between participants

Process will use a mixed payment model, which contains "Flat Fee advertising" and "Cost Per Action".

Flat Fee advertising is the model with fixed fee placement of the banner without taking into account the number of hits and clicks. The FFA model is one of the most popular pricing models for advertising. The size of the fee is set depending on the traffic to the pages, the server theme, the location of the advertisement on the page.

Cost per action - a pricing model in which the advertiser calculates with the publisher who placed the advertisement for specific actions of attracted visitors. For example, the calculation can be made for the number of completed questionnaires, for subscribing to certain services, for filling out applications, etc. In case of this project this payment will not be received by the publisher, but by the viewer and the calculation will be made for click after view ads.

In my project CPA will work through simple steps, see figure 3.1. To get payment user have to view advertising and just close it. After that the invoice creation and payment process will start.
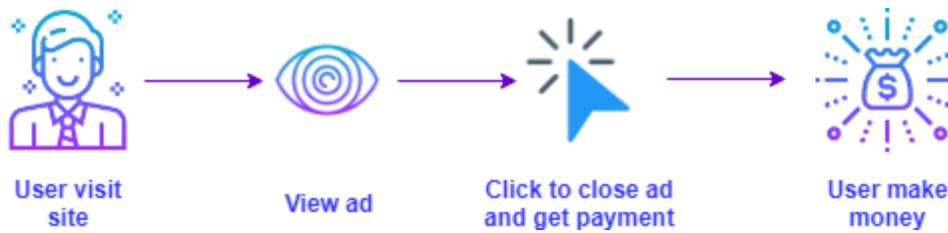
FIGURE 3.1: How CPA will work in my project

Flat Fee model will work like standard behavior. But the amount of payment for advertising on the site will be less than for regular advertising without a blockchain, since the advertiser will also pay each user for viewing.

3.3 Configuration Details

In order to configure BTC wallet, I set up BTC/LN nodes with "Node Launcher" and configure my crypto wallet by "Joule" extension. Moreover I have to launch the second Bitcoin testnet network, because I play the role of the all tree participants Advertiser, Viewer and Publisher. So for the one process I should have at least two testnets. To configure node follow simple steps bellow.

Firstly I used "Node Launcher" created by Pierre Rochard for syncing Lightning network and the Bitcoin Network together. The process of synchronization Bitcoin involves saving the history in the file on the user's computer. It can take from several hours to several days. How much time it takes to synchronize can be found by examining the characteristics of the system.

Since the creation of a personal database involves frequent accesses to the hard disk, the speed of its work significantly affects the overall dynamics of the process. Bitcoin synchronization can be accelerated using SSD-drives instead of the usual hard drives.

You can not turn off the computer until the task is completed. It is necessary to take care of the stability of the Internet connection. If you do not follow these rules, then the result of the interrupted synchronization will be the absence of bitcoins on the account that did not have time to be indexed. Cryptocurrency is only blocked, but does not disappear, so resynchronizing the wallet with the Bitcoin network will solve the problem.

The private keys are stored in the node and they are used for signing the transaction. Without the Node, I can never create a channel and make transactions.

Secondary install "Joule" Browser Extension, because I need to interact with Bitcoin Network.

Joule is just a browser extension that displays your bitcoin wallet with user-friendly interface. With this tool you can send coins, open, close and monitor channels, track transaction history, view past payments, deposits, or monitor pending invoices. It's written with React JavaScript library for user interface and Redux library. WebLN library for interacting with a user's Lightning node via the browser. WebLN is the standard, created by developer William O'Beirne, is inspired by his writings on creating popular services for Ethereum — MyCrypto and MyEtherWallet, which are used to store the air. His work on the web standard of Ethereum Web3 led to what he calls the "a-ha moment" (O'Beirne, 2019). Then he realized that Lightning offers opportunities for a similar set of standards for Bitcoin, which can

greatly simplify the interaction with payments on the Internet. WebLN is written on TypeScript (a statically-typed variant of JavaScript).

Thirdly install "Zap Desktop" for the advertiser BTC Node. Choose to create new wallet and launch BTC.

Chapter 4

Research approach

4.1 Survey

For my survey I used Google Forms. It turned out to interview about 60 people. The survey consisted of four questions that touched on the topic of advertising and the presence of a Bitcoin wallet. The purpose was to identify the desire of people to receive payment for advertising. The first three questions in my survey were required and the last one is optional.

The purpose of the first question was to determine how many people hate advertising. The survey showed that 85% of advertising annoys people. 4.1
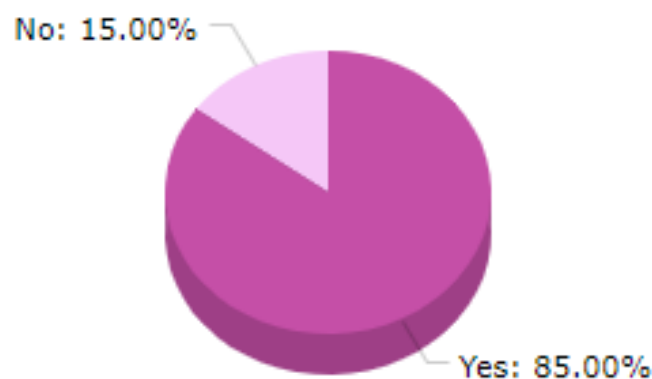

FIGURE 4.1: Question 1: Does advertising on the Internet annoy you?

The purpose of the second question was to determine how many people have Bitcoin wallet, because for my tool it's you must have it. The survey showed that about 92% of people don't have Bitcoin wallet (See Figure 4.2). Accordingly , to use my application, they will need to minimally understand what Bitcoin is and synchronize it and create wallet.

The purpose of the third question was to determine how many people are interested in watching ads if they get paid for it. The survey showed that 70% of people are interested (4.3). Since this is the majority, then I not for nothing chose this topic.

The purpose of the fourth question was to determine if people ready to set up Bitcoin Node and install "Joule" extension to use my tool (4.4).The survey showed that most are ready to install it.

Analysis of the data obtained as a result of a sociological survey allows us to conclude that people have a sufficient degree of interest in earning money from viewing advertising.
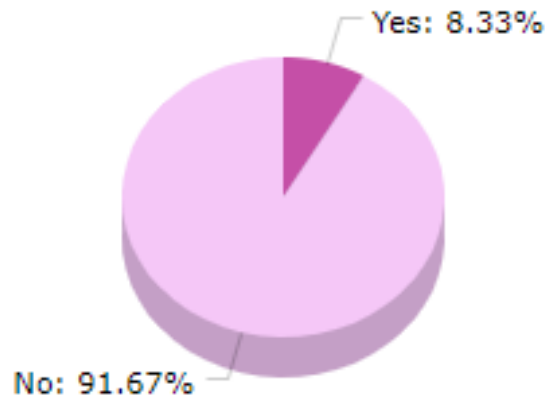
FIGURE 4.2: Question 2: Do you have Bitcoin wallet?

FIGURE 4.3: Question 3: Are you ready to watch the advertisement if
you received a monetary reward for this?

4.2   Comparison with analogues

Today, Bitcoin is earned not only by mining, buying on the exchange or in exchange offices. Earnings Bitcoins on viewing advertising is receiving a reward for clicks, surfing sites (viewing pages within a specified time).

With the increase in the price of cryptocurrency, as well as the complexity of the network (mining), the relevance of earnings on bitcoin networks is falling. But other ways still remain interesting for the average man. Such services are called Bitcoin boxes.

Unlike Bitcoin Networks, Satoshi or Bitcoin are obtained here by performing simple tasks. The tasks are as follows:

- View videos and pages

- Reading letters

- Surfing

- Enter captcha

Until the moment when people found out about Bitcoin, earnings for viewing advertising already existed, they only paid for it with fiat money. Payment in cryptocurrency is an alternative method, but no less popular, since it turns out to earn

FIGURE 4.4: Question 4: If you answered yes in the previous question, are you ready to set up Bitcoin wallet if you do not have it and install browser extension?

bitcoins without investments for clicks on advertising. Further more will sort out the popular boxes that specialize in viewing ads.

1. Cointiply

   The site cointiply.com offers customers more than 20 ways to earn Bitcoins without investments. There is an internal currency - the coin, the unit of which is equal to 1.59 satoshi, which is beneficial for withdrawing funds, especially at the moments of the fall of the bitcoin rate.The cointiply.com service is a regular tap, distributing satoshi for entering a captcha every hour, works on the principle of roulette you get a certain number, and the higher it is, the more cryptomonet you get. However, the highlight of this site is that it gives its users additional sources of income, and one of them is getting Satoshi for watching promotional videos.

   Terms of earnings:

   - The coefficient of rewards depends on the activity of the user
   - Fundraising every 60 minutes
   - The average amount received per hour is about $ 0.004 with bonuses (depending on the course)
   - PTC / ADDS gives about 70-80 coins per day
   - You can not enter your own funds, coins can only be displayed
   - No commission is charged - cointiply covers transaction fees
   - The minimum withdrawal amount is 35,000 coins
   - The site offers a bonus program - with each visit it is awarded points, but once a day. And bonus points for the installed mobile application

   Direct withdrawal of bitcoins to the wallet is processed once a week. The receipt of funds is confirmed within 24 hours. The site publishes a blockchain transaction ID for each payment to the account details.

2. Coinadder

   The site has been operating since 2014, and pays exclusively for viewing commercials. For registration bonus is charged. When entering the platform, be

sure to disable the Adblock extension (if you have it installed). The fact is that the site does not warn you that you cannot use ad blocking. That is, you can go to the profile and even follow the links, only Bitcoins will not pay for browsing the web

Terms of earnings:

- browsing time 30 seconds
- for one video they pay 25 satoshi
- 3 links are immediately available, the update occurs intervally
- Minimum withdrawal threshold is 10,000 Satoshi
- Payments to the FaucetHub wallet within 7 days registration bonus is 500 satoshi.

Sometimes the site does not have videos available for viewing. Also come across false links. The minimum amount for withdrawal is collected for a long time, so you should use the referral program.

3. Btcclicks

This is a fairly popular site, paying Satoshi for visiting web pages.

Terms of earnings:

- viewing time - 20 seconds
- for one video is charged from 0, 00005 to 0.00028 mBTC
- the minimum amount of withdrawal is 0,10000 mBTC
- 7 to 10 links available at a time, followed by an update
- no withdrawal fees

For users, there are two types of accounts - "Standard" and "Premium". The second allows you to earn more, as premium participants are paid at 0.00011 mBTC per view. Premium membership costs 0.75600 mBTC for 3 months and doubles earnings.

4. Kickasstrafic

Quick earnings for site views, advertising and clicks on it. On the Kickasstrafic resource, you can start earning coins immediately after specifying a bitcoin wallet. If you select FaucetHub for withdrawal, coins will be automatically transferred.

Terms of earnings:

- advertising viewing time is 10-15 seconds
- the number of available links start from 6
- for one viewing payment is 0.00016-0.00008 coins
- withdrawal to Bitcoin wallets, Electrum, or MyCelium
- The minimum withdrawal amount is 2,000,000 Satoshi (0.02 BTC).

Referral program is traditional. All participants earn 30% from the funds of invited users. You must visit the site at least once in 30 days. If the account is considered inactive, it is automatically blocked

In all the above options, there are many advantages, but the output of Bitcoins is always accompanied by some restrictions. This is what differentiate my platform. With the help of Lightning Network Bitcoins instantly credited to your account and you can use them immediately. Also, my tool will provide an opportunity to receive payment when viewing ads on any site not just on the platform. That is, advertising will be displayed on sites that allow it, for example, when you are watching an advertisement before a movie

Chapter 5

Implementation Details

I have created simple template of site using Webpack for front-end. It is a tool that allows you to compile, for example, JavaScript modules into a single JavaScript file. Webpack is also known as a module builder. And for back-end I used Node.js. It represents a JavaScript code execution environment based on the Chrome V8 JavaScript engine, which allows you to translate JavaScript calls into machine code. Node.js is primarily intended for creating server-side JavaScript applications.

With a large number of files, it creates one large file (or several files) to run your application.

You can see mock-up on figure 5.1. There is block with advertising in the right corner, so it's the main thing for my project.
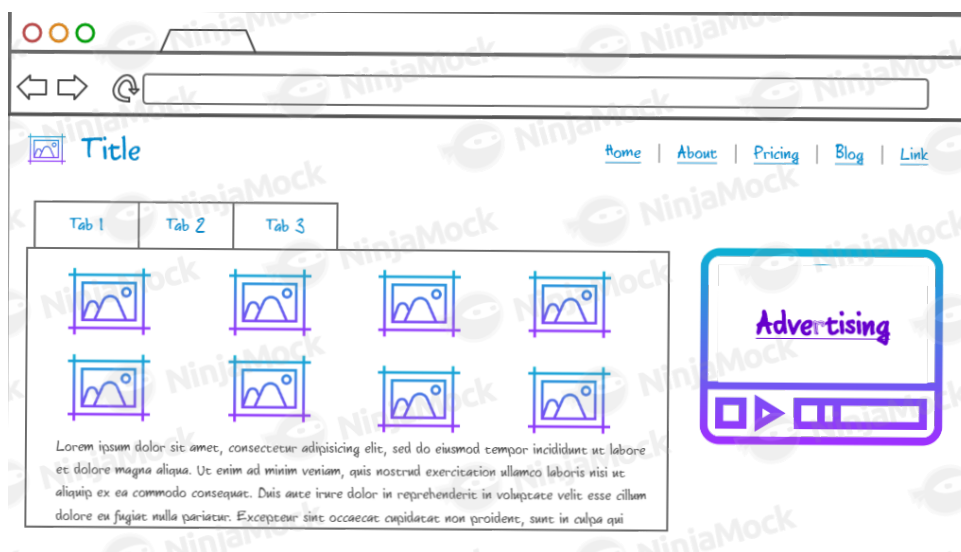

FIGURE 5.1: Mock-up of the site

Actions that this block performs:

1. Show advertising video

2. Checks that the user is on this page and that the user watched the video to the end

3. Generate lightning invoice from the user to get payment

4. Pay for the invoice

For any actions related to the blockchain, I use "HTTP request". For example, to create an invoice, I set the number of bitcoins that the advertiser indicated for one view and ask viewer to specify public address and finally send a request.

In my initial solution communication between the advertiser and the publisher takes place directly. That is, the advertiser contacts the site owner and provides an ad JavaScript block of code that will be posted on the site. Payment for accommodation is a standard way. You can find source code on GitHub.

Chapter 6

Conclusion

In this work, we considered different models of advertising and determined which one is suitable for my tool. We studied the principle of the cryptocurrency and in detail examined Bitcoin, delved into the idea of the Joseph Poon and Taj Dry of Lightning Network and took advantage of its capabilities. We developed a technical solution for tool to pay for ad views.

6.1 Future work

There are many opportunities to improve this project, which will give more opportunities to the publisher and the advertiser. Next I will look at some of them.

- It would be nice to adapt a tool to pay for different models of advertising, such as pay per click, for passing a questionnaire or survey, and so on.

- Platform to upload ad is a site where will be a list of sites publishers on which you can place the ad. Advertiser choose place for the most effective advertising and loads your ad. The platform processes ads so that users can receive payment.(6.1)
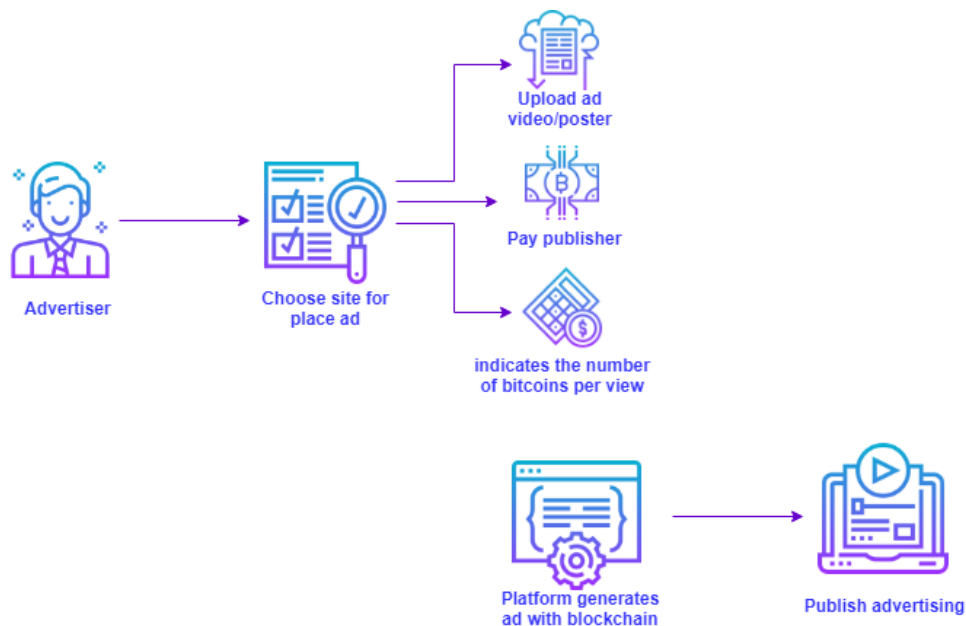

FIGURE 6.1: Platform to upload ad

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