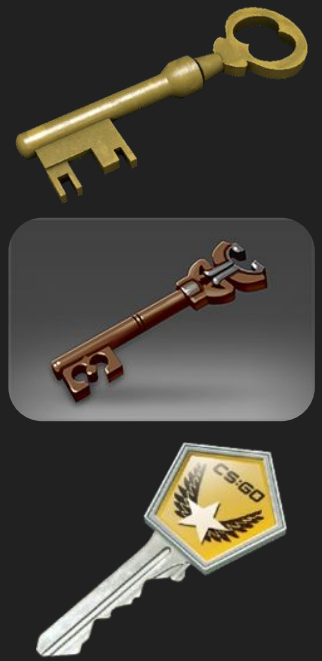
Construção de dataset para histórico de *in-game currencies*

Igor Gabriel Cavalcante de Carvalho Borges, RA 236773

Moedas e economias virtuais

Gold

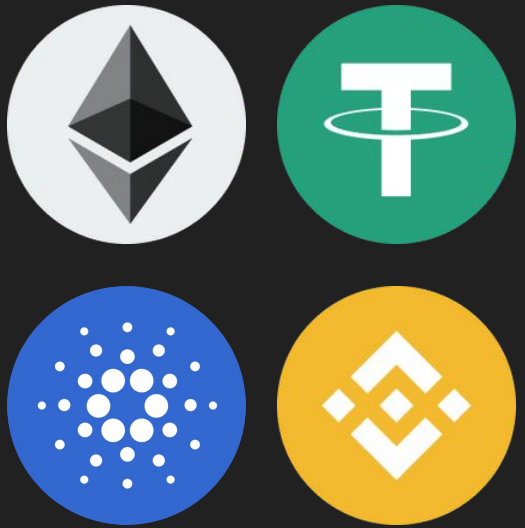


Keys e outros

Itens

Criptomoedas

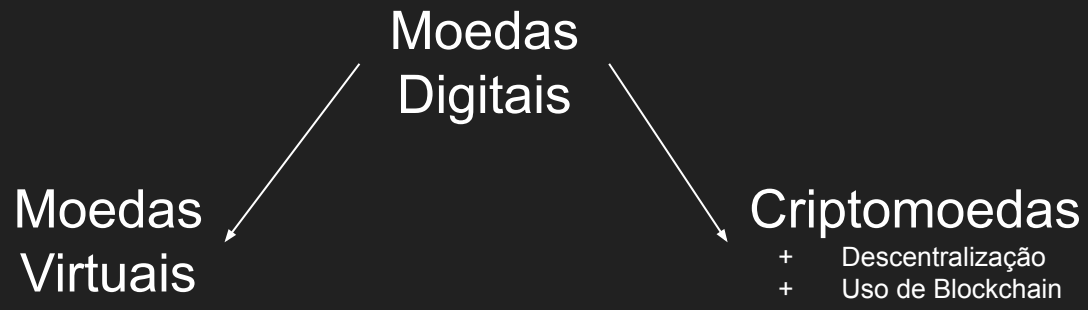
Bitcoin



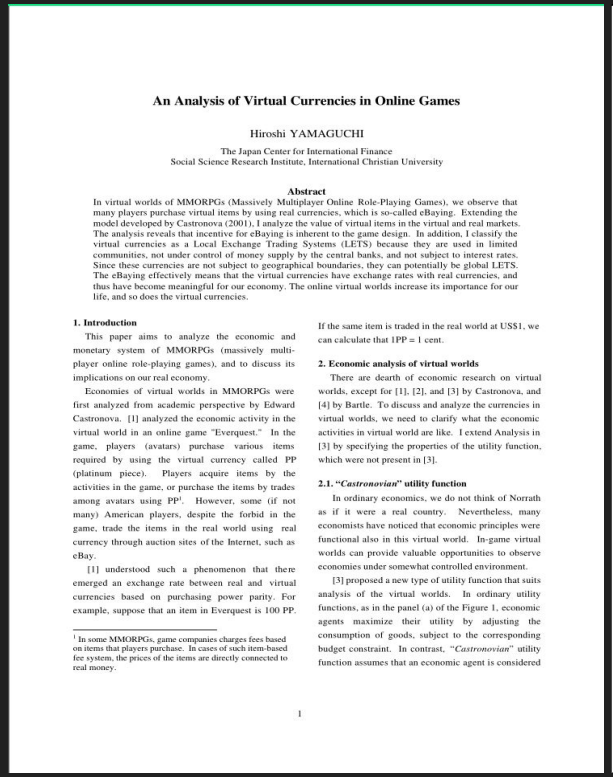
Altcoins

???

NFTs


Moedas
Digitais
Moedas
Virtuais
Criptomoedas
+ Descentralização
+ Uso de Blockchain

Pesquisas Existentes Sobre o Tema



An Analysis of Virtual Currencies in Online Games

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Abstract

In virtual worlds of MMORPGs (Massively Multiplayer Online Role-Playing Games), we observe that many players purchase virtual items by using real currencies, which is so-called eBaying. Extending the model developed by Castronova (2001), I analyze the value of virtual items in the virtual and real markets. The analysis reveals that incentive for eBaying is inherent to the game design. In addition, I classify the virtual currencies as a Local Exchange Trading Systems (LETS) because they are used in limited communities, not under control of money supply by the central banks, and not subject to interest rates. Since these currencies are not subject to geographical boundaries, they can potentially be global LETS. The eBaying effectively means that the virtual currencies have exchange rates with real currencies, and thus have become meaningful for our economy. The online virtual worlds increase its importance for our life, and so does the virtual currencies.

1. Introduction

This paper aims to analyze the economic and monetary system of MMORPGs (massively multi-player online role-playing games), and to discuss its implications on our real economy.

Economies of virtual worlds in MMORPGs were first analyzed from academic perspective by Edward Castronova. [1] analyzed the economic activity in the virtual world in an online game "Everquest." In the game, players (avatars) purchase various items required by using the virtual currency called PP (platinum piece). Players acquire items by the activities in the game, or purchase the items by trades among avatars using PP[1]. However, some (if not many) American players, despite the forbid in the game, trade the items in the real world using real currency through auction sites of the Internet, such as eBay.

[1] understood such a phenomenon that there emerged an exchange rate between real and virtual currencies based on purchasing power parity. For example, suppose that an item in Everquest is 100 PP. If the same item is traded in the real world at US$1, we can calculate that 1PP = 1 cent.

2. Economic analysis of virtual worlds

There are dearth of economic research on virtual worlds, except for [1], [2], and [3] by Castronova, and [4] by Bartle. To discuss and analyze the currencies in virtual worlds, we need to clarify what the economic activities in virtual world are like. I extend Analysis in [3] by specifying the properties of the utility function, which were not present in [3].

2.1. "*Castronovian*" utility function

In ordinary economics, we do not think of Norrath as if it were a real country. Nevertheless, many economists have noticed that economic principles were functional also in this virtual world. In-game virtual worlds can provide valuable opportunities to observe economies under somewhat controlled environment.

[3] proposed a new type of utility function that suits analysis of the virtual worlds. In ordinary utility functions, as in the panel (a) of the Figure 1, economic agents maximize their utility by adjusting the consumption of goods, subject to the corresponding budget constraint. In contrast, "*Castronovian*" utility function assumes that an economic agent is considered

[1] In some MMORPGs, game companies charges fees based on items that players purchase. In cases of such item-based fee system, the prices of the items are directly connected to real money.

PLOS | ONE

RESEARCH ARTICLE

The Predecessors of Bitcoin and Their Implications for the Prospect of Virtual Currencies

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OPEN ACCESS

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Data Availability Statement: The price data of game currencies in this paper are acquired from itemmania.com and ige.com. Bitcoin prices are obtained from www.coindesk.com and the exchange rates of real currencies are acquired from www.oanda.com. Gold pricing data comes from the Federal Reserve Bank of St. Louis website. Stock prices are acquired from the Center for Research in Security Prices (CRSP) at the University of Chicago.

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Competing Interests: The authors have declared that no competing interests exist.

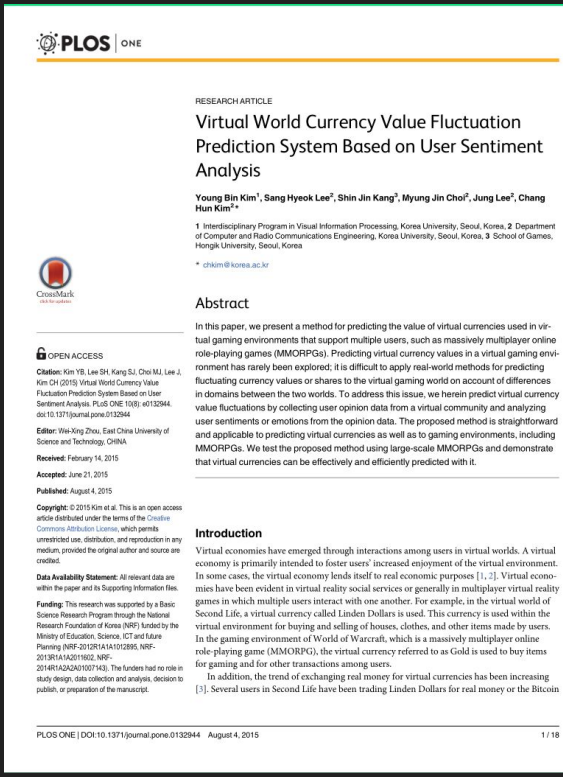
Abstract

To examine whether the recent price patterns and transaction costs of Bitcoin represent a general characteristic of decentralized virtual currencies, we analyze virtual currencies in online games that have been voluntarily managed by individuals since 1990s. We find that matured game currencies have price stability similar to that of small size equities or gold, and their transaction costs are sometimes lower than real currencies. Assuming that virtual currencies with a longer history can provide an estimate for Bitcoin's prospects, we project that Bitcoin will be less influenced by speculative trades and become a low cost alternative to real currencies.

Introduction

Throughout history, the management of currency has been a responsibility and a right of a central authority. The recent debut of virtual currencies, such as Bitcoin, however, challenges this tradition. Electronic currencies are unique as the creation and management of these currencies are done by non-government entities. Further, there is an ongoing debate regarding whether these decentralized currencies are capable of serving as a substitute for the role of real currencies. In his letter to the Senate in 2013, Bernanke, the Federal Reserve Board chairman, states that cyber currencies "may have long-term promise." On the other hand, Krugman [1] criticizes virtual currencies because they are used primarily for speculation rather than as a method of transaction.

It has been only a few years since Bitcoin received much public attention, and it is difficult to determine whether the current observations from Bitcoin represent general characteristics of decentralized virtual currencies or are Bitcoin-specific. To acquire a more general understanding about virtual currencies, we examine a similar type of virtual currency that has been voluntarily traded and managed by individuals since the 1990s. The first cash payments between players for a virtual item occurred in 1987 (Heeks [2]). The purpose of our analysis is to obtain the prospects of Bitcoin from other similar virtual currencies with a longer history.



PLOS | ONE

RESEARCH ARTICLE

Virtual World Currency Value Fluctuation Prediction System Based on User Sentiment Analysis

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Data Availability Statement: All relevant data are within the paper and its Supporting Information files.

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Abstract

In this paper, we present a method for predicting the value of virtual currencies used in virtual gaming environments that support multiple users, such as massively multiplayer online role-playing games (MMORPGs). Predicting virtual currency values in a virtual gaming environment has rarely been explored; it is difficult to apply real-world methods for predicting fluctuating currency values or shares to the virtual gaming world on account of differences in domains between the two worlds. To address this issue, we herein predict virtual currency value fluctuations by collecting user opinion data from a virtual community and analyzing user sentiments or emotions from the opinion data. The proposed method is straightforward and applicable to predicting virtual currencies as well as to gaming environments, including MMORPGs. We test the proposed method using large-scale MMORPGs and demonstrate that virtual currencies can be effectively and efficiently predicted with it.

Introduction

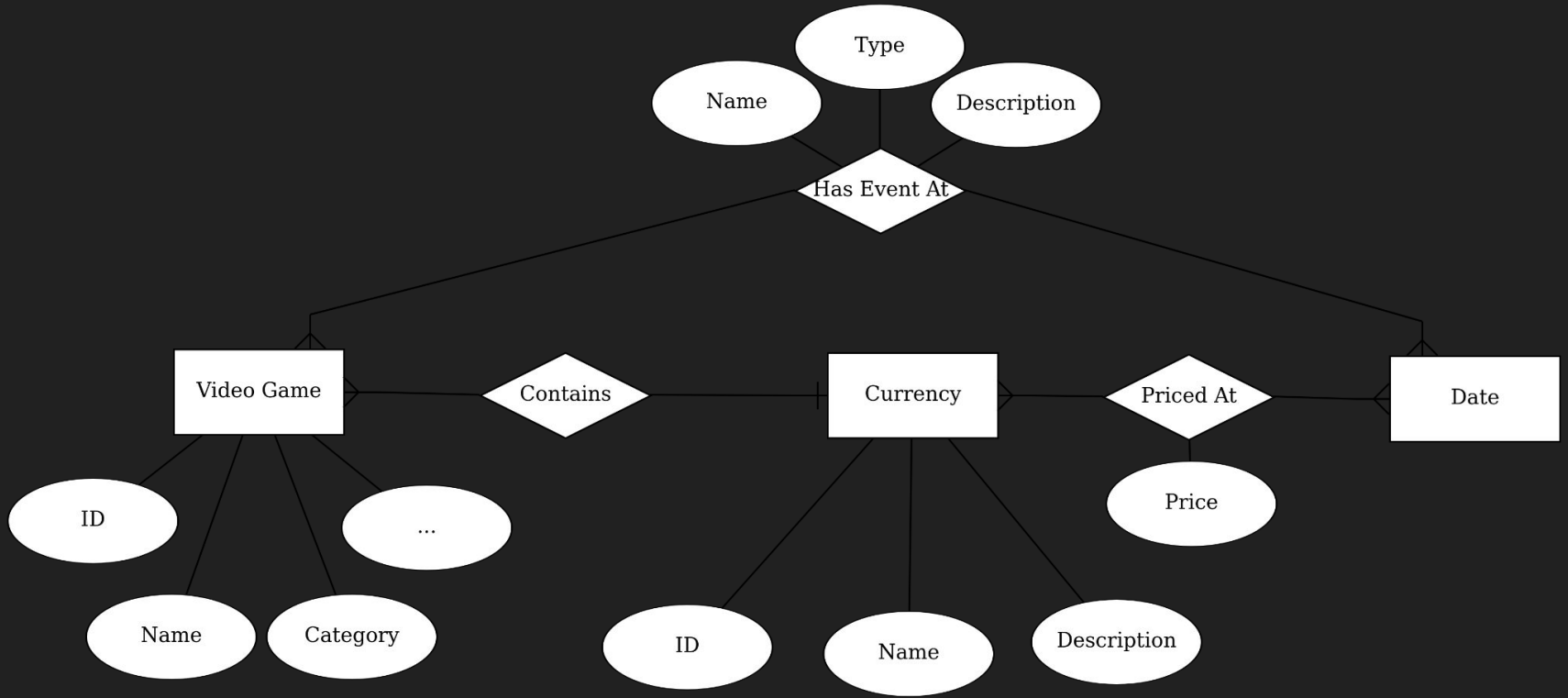
Virtual economies have emerged through interactions among users in virtual worlds. A virtual economy is primarily intended to foster users' increased enjoyment of the virtual environment. In some cases, the virtual economy lends itself to real economic purposes [1, 2]. Virtual economies have been evident in virtual reality social services or generally in multiplayer virtual reality games in which multiple users interact with one another. For example, in the virtual world of Second Life, a virtual currency called Linden Dollars is used. This currency is used within the virtual environment for buying and selling of houses, clothes, and other items made by users. In the gaming environment of World of Warcraft, which is a massively multiplayer online role-playing game (MMORPG), the virtual currency referred to as Gold is used to buy items for gaming and for other transactions among users.

In addition, the trend of exchanging real money for virtual currencies has been increasing [3]. Several users in Second Life have been trading Linden Dollars for real money or the Bitcoin

Problemas

- Pesquisas mais recentes são de 2015
- Foco quase exclusivo em MMORPGs
- Ausência de datasets públicos facilmente acessíveis para o tema
    - Dados das pesquisas obtidos por web scraping, para um pequeno conjunto de moedas.

Modelo Conceitual - Esboço



Possíveis Modelos Lógicos

- Maior parte contida em formato relacional (SQL ou arquivo CSV), pela necessidade de tabelas de datas e preços.
- “Video Games” pode possuir um número variado de propriedades, como “Currencies” e dados específicos do jogo. Ao mesmo tempo, assim que inseridos, esses dados não serão modificados. Assim, armazená-los em formato JSON ou XML pode ser uma escolha mais adequada.
- ...Porém, armazená-los em formato de redes permite o acesso mais fácil a conjuntos de jogos conectados pela mesma propriedade, como gênero, ou moedas pertencentes ao mesmo jogo sem saber o mesmo de antemão.

Questões iniciais

- Como o comportamento dessas moedas virtuais se compara com o de moedas tradicionais?
- Similarmente, como seu comportamento se compara com o de criptomoedas?
- Como, e em que grau, elas são afetadas por eventos internos (como updates) e externos (como quedas no mercado)
- É possível prever seu comportamento com uso de algoritmos? (mais adequada para pesquisas de machine learning)

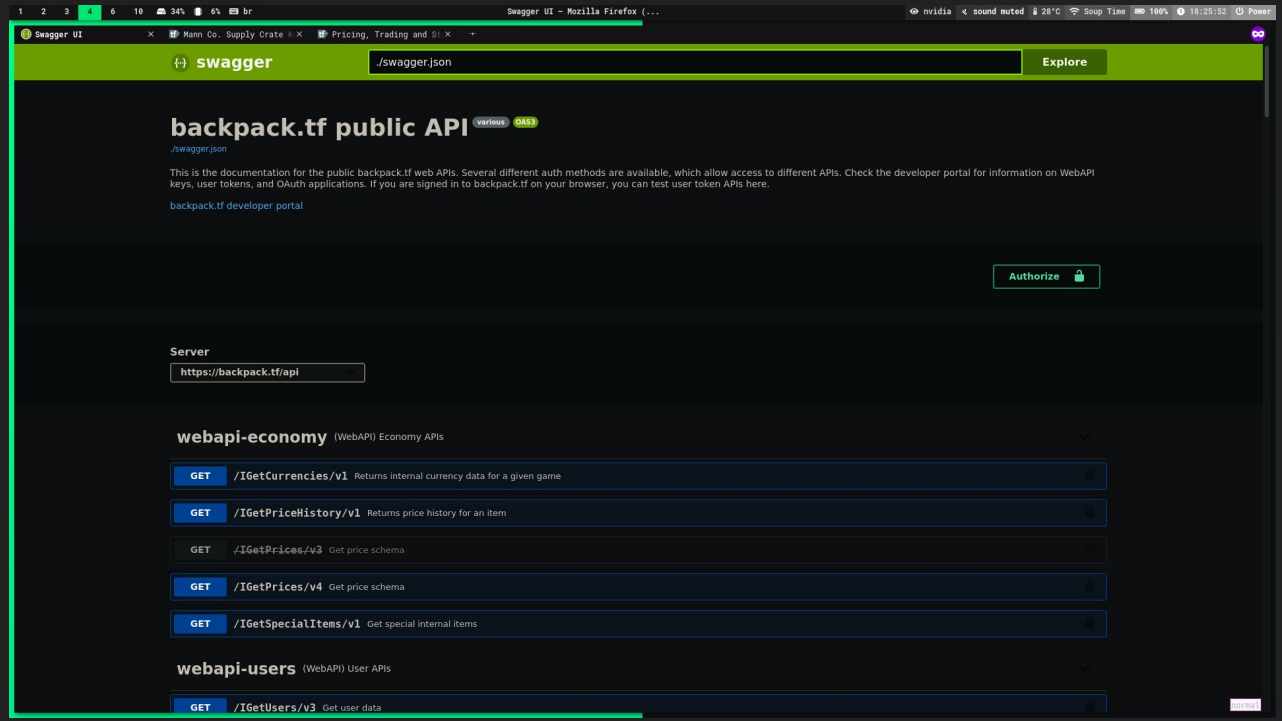
Possíveis Fontes de Dados

backpack.tf

backpack.dt

Possíveis Formas de Obtenção de Dados

- Agregação por APIs públicas

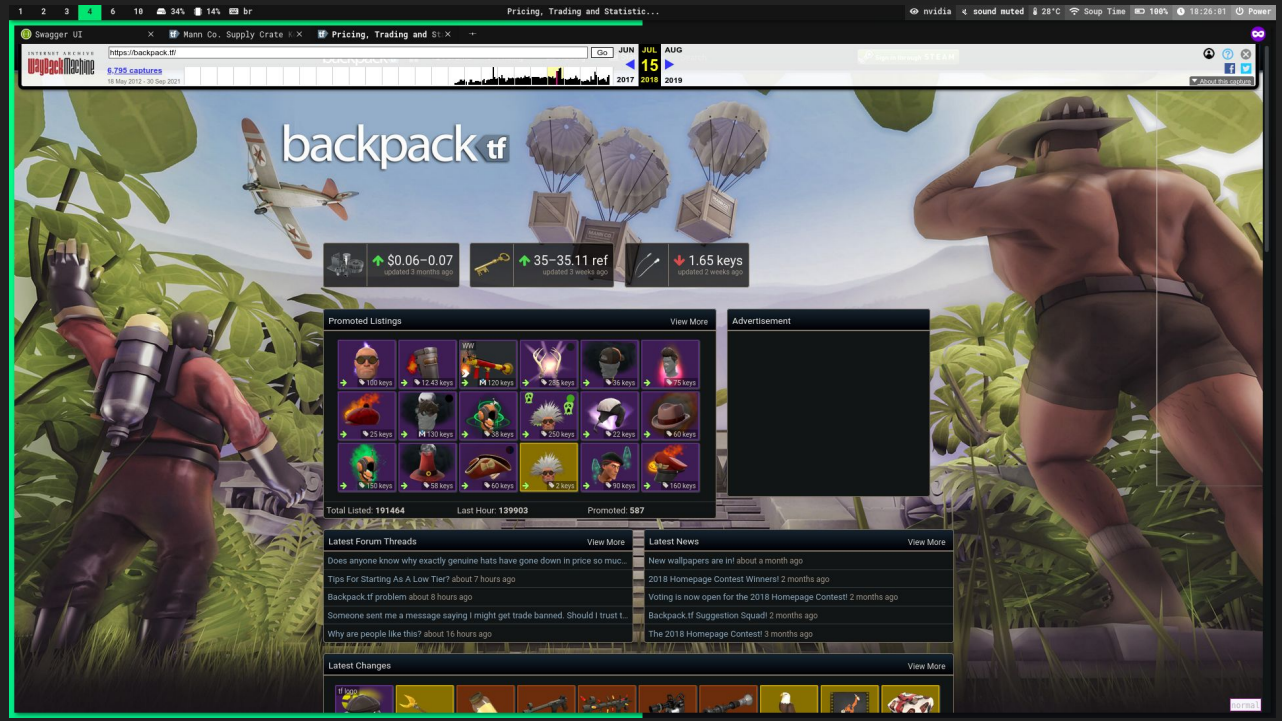


Possíveis Formas de Obtenção de Dados

- Extração por Web Scraping de gráficos

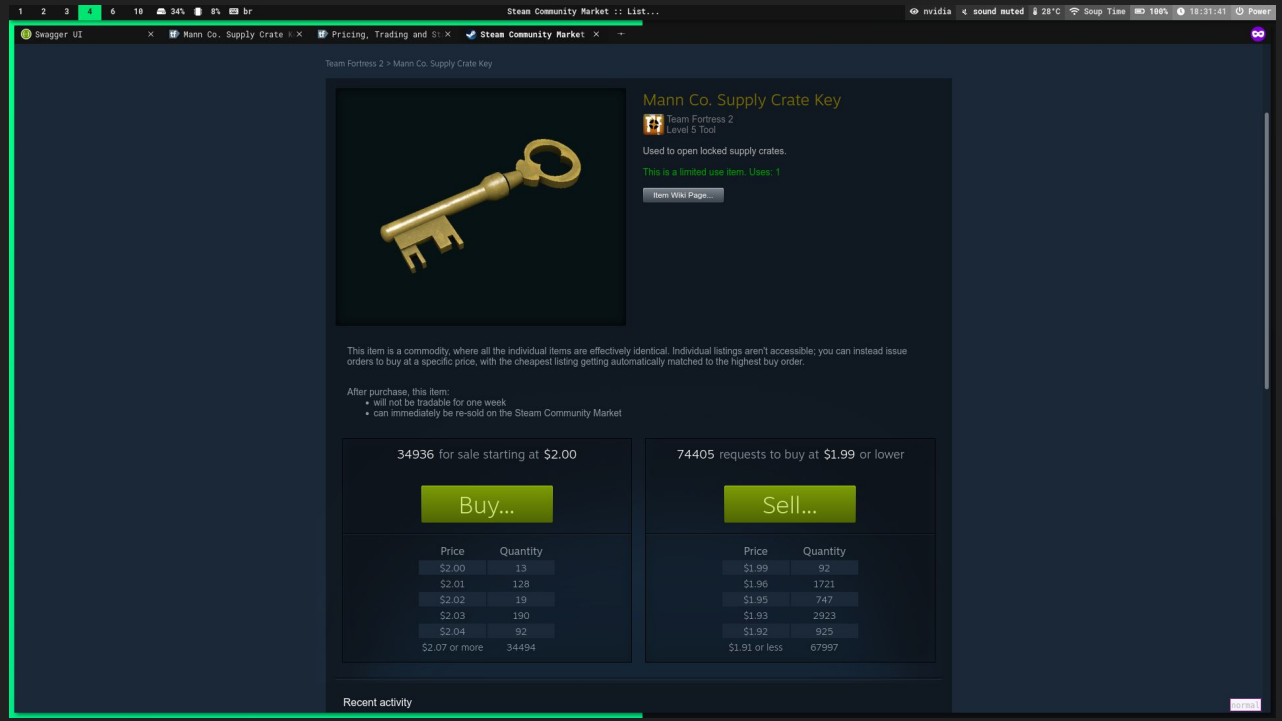
Possíveis Formas de Obtenção de Dados

- Extração por Web Scraping usando Wayback Machine



Possíveis Formas de Obtenção de Dados - Etapas Extras

- Ausência de valor único. Necessidade de tratamento antes de inserção



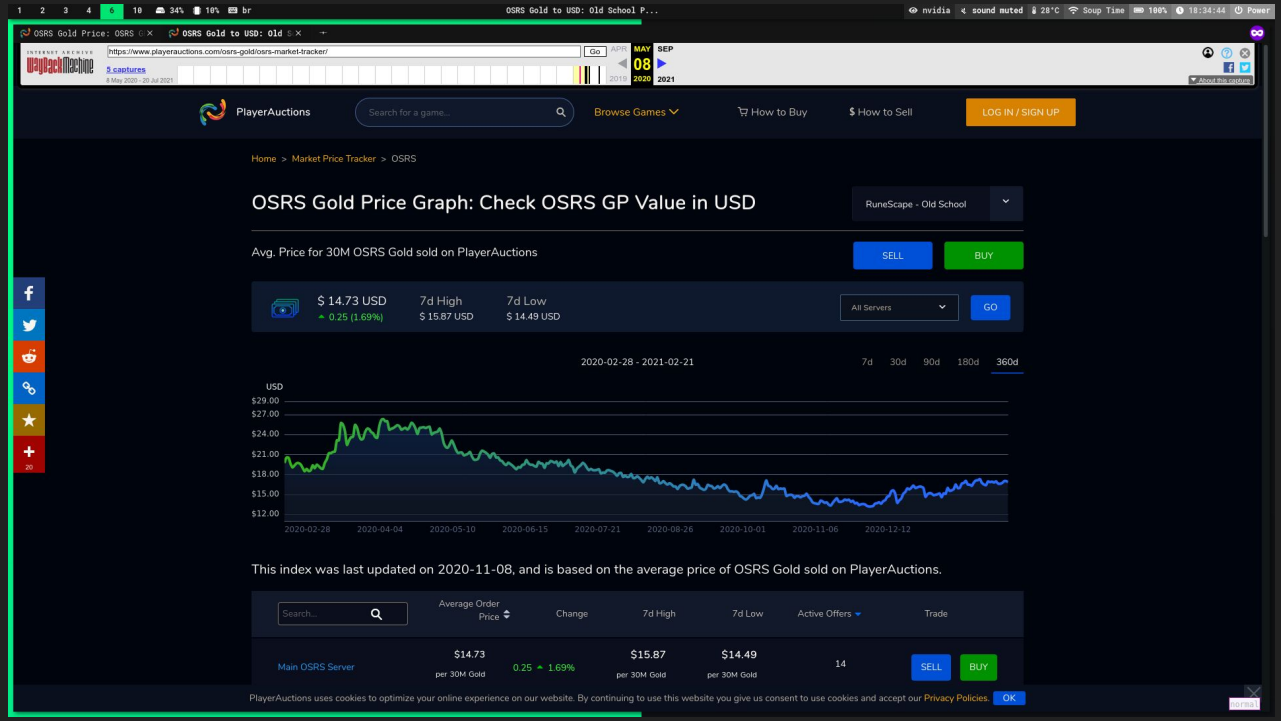
Possíveis Formas de Obtenção de Dados - Etapas Extras

- Combinação de métodos para melhores resultados

Utilizando a página do PlayerAuctions atual, só é possível obter o valor da moeda entre 05/10/2020 e 29/09/2021

Possíveis Formas de Extração - Etapas Extras

- Combinação de métodos para melhores resultados



Utilizando a versão arquivada mais antiga da página no Wayback Machine, é possível obter os valores no intervalo entre 28/02/2020 e 21/02/2021, adicionando mais de 6 meses de dados.

Conclusão