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Developing a Software Agent to Access Drug-Related Information from the Dark Web

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تطوير وكيل برمجي للوصول إلى معلومات متعلقة بالمخدرات من الويب المظلم

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Abstract:
Software agents have been increasingly utilized across various domains in information technology, including electronic commerce, information retrieval, and autonomous decision-making. In parallel, the dark web has become a prominent platform for illicit drug trading, particularly marijuana. While previous studies have focused on tracking users accessing the dark web, few have proposed structured methods for extracting drug-related information. Moreover, existing approaches are often time-consuming and complex, making them impractical for educational or analytical use. This research aims to model and develop a software agent capable of autonomously accessing and retrieving marijuana-related information from dark web marketplaces. The methodology follows a typical software agent development life cycle, encompassing requirement analysis, system design, development, evaluation, and documentation. Four specific plans were created to represent different dark web markets, each modeled using UML class diagrams. These diagrams were then normalized into a unified model to eliminate redundancy and streamline agent development. The results include a generalized UML class diagram that consolidates common functionalities such as user registration, login, drug search, and data retrieval across various markets. This normalized model facilitates more efficient and modular development of software agents in dark web environments. The main contribution of this study lies in its systematic modeling approach, offering a reusable framework for agent-based access to illicit online content for research and educational purposes. Future work will focus on extending this framework to support other domains and tasks within the dark web.

Keywords: Agent-Based System, Dark Web, Drug Information Retrieval, Software Agent, UML Modeling.

الملخص:

ازداد استخدام وكلاء البرمجيات في مختلف مجالات تكنولوجيا المعلومات، بما في ذلك التجارة الإلكترونية، واسترجاع المعلومات، واتخاذ القرارات بشكل مستقل. وبالتوازي مع ذلك، أصبح الإنترنت المظلم منصة بارزة لتجارة المخدرات غير المشروعة، وخاصة الماريجوانا. وبينما ركزت الدراسات السابقة على تتبع المستخدمين الذين يدخلون إلى الإنترنت المظلم، لم يقترح سوى القليل منها أساليب منظمة لاستخراج المعلومات المتعلقة بالمخدرات. علاوة على ذلك، غالبًا ما تكون الأساليب الحالية معقدة ومستهلكة للوقت، مما يجعلها غير عملية للاستخدام التعليمي أو التحليلي. يهدف هذا البحث إلى نمذجة وتطوير وكيل برمجي قادر على الوصول إلى المعلومات المتعلقة بالماريجوانا واسترجاعها بشكل مستقل من أسواق الإنترنت المظلم. تتبع المنهجية دورة حياة تطوير وكيل برمجي نموذجية، تشمل تحليل المتطلبات، وتصميم النظام، والتطوير، والتقييم، والتوثيق. وُضعت أربع خطط محددة لتمثيل أسواق الإنترنت المظلم المختلفة، ونمذجت كل منها باستخدام مخططات فئات UML ثم تم توحيد هذه المخططات في نموذج موحد لتجنب التكرار وتبسيط عملية تطوير الوكيل. تتضمن النتائج مخططًا فئويًا معممًا بلغة النمذجة الموحدة UML يجمع الوظائف الشائعة، مثل تسجيل المستخدم، وتسجيل الدخول، والبحث عن المخدرات، واسترجاع البيانات عبر أسواق مختلفة. يُسهّل هذا النموذج المُوحَّد تطويرًا أكثر كفاءةً وتعددًا لوكلاء البرامج في بيئات الويب المظلم. تكمن المساهمة الرئيسية لهذه الدراسة في نهجها النمذجة المنهجي، الذي يُوفر إطارًا قابلًا لإعادة الاستخدام للوصول القائم على الوكلاء إلى المحتوى غير المشروع عبر الإنترنت لأغراض البحث والتعليم. ستركز الأعمال المستقبلية على توسيع نطاق هذا الإطار لدعم مجالات ومهام أخرى داخل الويب المظلم.

الكلمات الدالة: استرجاع معلومات المخدر، الويب المظلم ، نظام قائم على الوكيل البرمجي، نمذجة بلغة UML، وكيل برمجي.

1 Introduction

Software agents have been used in many areas of Information Technology (IT). They are being used for applications as diverse as personalized information management, electronic commerce, interface design, computer games, and management of complex commercial and industrial processes. The agents work to achieve the goals that is assign by the user. Drug dealing is illegal in most of the country and mostly can be trade in in dark market. For online transaction, the drugs mostly sold in the dark web.

Most of current software agents have concerned with tracking the users who try to access into dark web for ethical reasons. However, those agents have not presented a clear method or approach for searching in dark web. In addition, the traditional methods and approaches that have been used for getting the information from the dark web are not useful because a lot of steps that should be followed to access into dark web. Those steps require more time and hard procedures. Therefore, software agent characterized by means of saving the search time and easy procedures for searching by normal users. This research aims to design and implement a software agent capable of accessing and retrieving information on marijuana from the dark web. To achieve this, it focuses on developing search plans, modeling the system using UML diagrams, converting these plans into algorithms, and building an autonomous agent to navigate and extract data from dark web drug marketplaces.

2 Literature Review

Before we try to define what, a Software Agent is, let us first try to understand the meaning and characteristics of an agent. We are all, in one sense or another, familiar with the concept of an agent. Probably most of us have dealt with travel agents and we know the role undertaken by them. The main representative role of a travel agent, for example, is that it acts on behalf of others. This characteristic can be considered as the first fundamental property of agency. A travel agent acts on behalf of a traveler in a variable degree of autonomy. In other words, when a travel agent calls an airline to reserve a seat, they do so autonomously; that is, they do not tell the airline to whom do they need a seat, they just say we need a seat. This is the second characteristic of agency – autonomy. A third characteristic of an agent is the degree of proactivity and reactivity in their behavior. For example, once an agent receives the details of its tasks, it tries proactively to attain the goals defined by the assigned tasks. And it reacts to the changes in the available data by modifying its plan. Agents may also exhibit other attributes, including: learning, co-operation, and mobility (Green et al., 1997; Jennings, 2001).

2.1 What is an Agent?

Based on the above discussion, an agent can be defined, along with its characteristics as follow:

- acts on behalf of others in an autonomous fashion
- performs its actions in some level of proactivity and reactivity
- Exhibits some levels of the key attributes of learning, co-operation, and mobility."

This definition, which is based on the definition given in Green et al. (1997), is equally true for software agents. In Nwana (1996); Wooldridge and Jennings (1995), both sources define an agent as fundamentally an autonomous, goal-driven software entity that can perceive and act within an environment. What differentiates an intelligent agent is the addition of flexibility, social ability, and proactive behavior in pursuing complex goals. However, what exactly is a software agent and how does it differ from a software object? You may think of a software agent as one (or more) software object(s) that conforms to the above characteristics of agents and can be described as inhabiting computers and networks, assisting users with computer-based tasks. It is the responsibility of the programmer, however, to determine what an agent can do, as well as the information required from the user or software for an agent to perform its actions in a reactive manner. The behavior of the agent may be defined by other software, which you can envision as a sort of super-agent that forks (or clones) new agents when there is a task that demands additional interest (help).

Software agents are likely the fastest growing area of Information Technology (IT). They are being used, and promoted, for applications as divergent as personal information management, electronic commerce, interface design, computer games, and management of complex commercial and industrial processes. In spite of this proliferation, there remain, as yet, no commonly agreed upon definitions of exactly what an agent is. Wooldridge (2001) defines it as: "An agent is an entity which is placed in an environment and perceives various parameters which are evaluated to make a decision established by the agent's goal". Ye et al. (2016) takes agents to be: "An agent is a computer system that is capable of independent action on behalf of its user or owner. An agent is able to determine for itself what it needs to do in order to satisfy its design objectives, rather than being explicitly told what to do at any given moment. A multiagent system is composed of a number of agents, which interacts with each other, typically by exchanging messages using some computer network infrastructure". Dorri et al. (2018) defines an agent as: "An agent is an encapsulated computational system that is situated in an environment and this is capable of flexible autonomous action in that environment in order to meet its design objectives. While Park et al. (2023) defines the agent as "Generative agents — Computational software agents that generate behavior looking very much like natural human behavior.

There are "predictive" agents, which volunteer information or services to a user, without being explicitly asked, whenever it is deemed appropriate (e.g., an agent may monitor newsgroups on the INTERNET and return discussions that it believes to be of interest to the user or a holiday agent may inform its user that a travel firm is offering large discounts on holidays to South Africa knowing that the user is interested in safaris). Common to all these classes are the following key hallmarks of agent hood (Huang et al., 2024; Russell & Norvig, 2010; Wooldridge & Jennings, 1995; Zhou et al., 2023):

- Autonomy – refers to the ability of agents to operate without human control. Wooldridge and Jennings (1995) introduce autonomy to refer to the capacity of an agent to control its own system internal state and behavior to achieve prescribed goals. This ability is necessary for the creation of language-based agents, especially those based on large language models, where planning enables agents to act in changing environments without supervision.
- Social competency refers to the ability of an agent to communicate well with some other agents or human users. In multi-agent system, this involves negotiations, cooperation, and complying to communication protocols.
- The responsiveness of the agent implies its capability to perceive and react to changes in its operational field. At the level of LLM-based agents, responsiveness encompasses integrating (in real time) user feedback, environmental dynamics, and task-related restrictions, and making sure that the agent's actions are contextually relevant and current.
- Activeness, where the agent generates and purposefully act upon their own goals, rather than merely reacting to the environment. Recent studies show that these language agents demonstrate multi-step plan-driven behavior consistent with proactive intelligence.

When taken together, these attributes mark software agents as a fundamentally new paradigm — markedly different from related IT disciplines such as object-oriented systems, artificial intelligence, and distributed computing. There are two key distinguishing characteristics. Firstly, relatively high-level tasks can be delegated to agents who will autonomously carry them out. Secondly, agents are situated in an environment which can dynamically affect their problem-solving behavior and strategy. When a new task is delegated, the agent has to determine precisely what the objective is, evaluate how this objective can be reached in an effective manner, and perform the necessary actions. Whilst this is going on, the agent must keep track of what is happening in its environment to ensure that the objective is still appropriate, that the plan of action is still valid, and that no new, and more important, opportunities have arisen. As well as these internal processes, software agents often need to interact with other entities (either humans or software agents) in order to accomplish their objectives. Such interchanges may range from simple requests (e.g., tell me how much a particular flight to Paris costs) to complex negotiations (e.g. arguing over which date to arrange a meeting).

2.2 Classification of Software Agents

Previous papers on software agents are also reviewed, and three of its fundamental attributes among others are discussed for categorization: autonomy, learning, and cooperation. These properties are the foundations for the types of agents in classical and modern systems. The basic model of an agent, as introduced by Wooldridge and Jennings (1995), focuses on autonomy as the capability of the agent to act on its own by keeping track of internal states and working towards user assigned objectives, while Russell and Norvig (2010) dive deeper into the idea that agents need to be responsive and act rationally in ever-changing environments. With the emergence of language-based agents, recent studies by Huang et al. (2024) and frameworks introduced by Zhou et al. (2023) highlight how these modern agents utilize large language models (LLMs) to plan and carry out tasks proactively, emphasizing the importance of autonomy and goal-oriented behavior.

Cooperation has also been a key area of focus in the development of multi-agent systems. Wooldridge and Jennings (1995) argue that agents need social skills to interact effectively with one another, a challenge that grows more complex in distributed settings. Moreover, Nwana (1996) offers a comprehensive look at agent systems, underscoring the significance of cooperation in diverse agent environments.

Lastly, learning is seen as a defining trait of intelligent behavior in agents. These smart agents not only react to external stimuli but also evolve and refine their actions over time. These three characteristics of agents are used to derive some types of agents to include in our classification as shown in Figure 1.

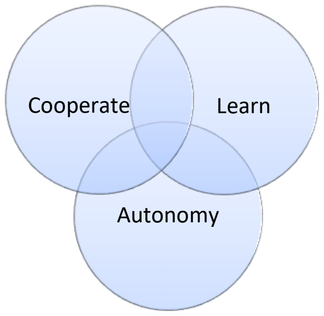


Figure 1: A partial view of agent classification

2.3 Why Software Agents?

The merits of anchoring software development in the paradigm of agents have been progressively acknowledged throughout the years. Initial seminal contributions accentuated how agent-centric methodologies provide modularity, adaptability, and an intuitive framework for modeling intricate, distributed systems. Contemporary investigations reaffirm these advantages, particularly in the context of advancements in artificial intelligence and software engineering.

Current research has delved into the function of agents within dynamic, intelligent, and decentralized contexts. For instance, recent investigations have illustrated how large language models (LLMs) can be integrated into multi-agent systems to enhance collaboration and problem-solving capabilities in software development (Qian et al., 2024). Additional surveys elucidate the transition towards LLM-driven agents for functions such as code generation, debugging, and system adaptation (Jin et al., 2024).

Such systems are frequently conceptualized as aggregates of interacting autonomous agents, each possessing distinct competencies and objectives. This abstraction empowers developers to envision software systems as collectives of cooperative problem solvers, which aligns effectively with real-world applications such as adaptive interfaces, autonomous control systems, and intelligent environments (Majdoub et al., 2025; Wrona et al., 2023).

2.4 Dark web

Recently many of us believe that by using a Google search we can get most of the information available on the Internet on a given subject. Nevertheless, there is an entire online world an immense one beyond the reach of Google or any other search engine. Policymakers should take a cue from prosecutors, who just convicted one of its masterminds, and start giving it some attention.

The measure of the Internet's underworld is massive. The public information on the Deep Web is presently 400 to 550 times larger than the commonly-defined World Wide Web. Deep Web holds nearly 550 billion individual documents compared to about one billion on the normal Web, and more than 200,000 Deep Websites currently exist. And the Dark Web is where the dark side of the Internet flourishes. Whereas there are sufficiently of law abiding citizens and well-intentioned individuals such as journalists and journalists, who conduct their online activities below the surface, the part of the Dark Web known as the Deep Web has become a conduit for illegitimate and often dangerous activities (Bergman, 2001).

2.5 Discussion of the literature

Morato et al. (2025) examined the extent to which search engines operating on the dark web implement web positioning strategies, focusing on information retrieval and ranking algorithms. The analysis revealed that dark web search engines apply search strategies and web positioning, aiming to improve retrieval and user experience. Despite these efforts, the strategies were found to be ineffective, retrieving a small number of documents of dubious relevance, highlighting the need for alternative approaches to achieve more relevant, up-to-date, and secure results.

In 2024, a curated selection of premier Open-Source Intelligence (OSINT) tools was presented to aid in combating dark web crime. These tools assist investigators by unmasking perpetrators, extracting actionable insights, and mitigating the perils inherent to the darknet (OSINT Team, 2024). While potent as standalone assets, their efficacy is maximized when integrated into existing investigative frameworks, indicating a potential limitation when used in isolation.

DarkBERT is a language model pretrained on dark web data, designed to address the lexical and structural diversity of the dark web (Jin et al., 2023). DarkBERT outperforms existing language models in various use cases, providing valuable insights for researchers analyzing dark web content. The model's effectiveness is contingent on the quality and representativeness of the training data, which may not encompass the full spectrum of dark web content.

Zhang et al. (2022) introduced a framework utilizing Generative Adversarial Networks (GANs) to overcome text-based CAPTCHA challenges on the dark web, facilitating data collection. The framework achieved a high success rate in breaking dark web CAPTCHA, enhancing automated data collection capabilities. The method may raise ethical concerns and could be circumvented by evolving CAPTCHA designs, necessitating continuous adaptation.

Hayes et al. (2018) provided an analytical framework for automating dark web scraping and analysis using free tools, validated through a case study. The framework enables efficient retrieval of vendor and marketplace listing data, supporting investigations into dark web activities. Reliance on specific tools like AppleScript may limit scalability and adaptability to diverse dark web environments.

While existing studies have explored various aspects of dark web data retrieval, classification, and analysis, there remains a significant gap in developing a comprehensive software agent system specifically designed to autonomously access and search for drug-related information, such as marijuana, on the dark web. Current methods often lack integration of search planning, system modeling, algorithm development, and autonomous navigation tailored to the unique challenges of dark web drug marketplaces. This research aims to bridge this gap by designing and implementing a software agent that encompasses these components, thereby enhancing the capability to access and retrieve pertinent drug information from the dark web effectively.

3 Methodology

The research goal is to develop a software agent for accessing drug information in dark web environment. In achieving the objectives, the following steps that are used in most of software agents' life cycle are therefore adopted:

a. Requirements Analysis

In this phase, we collected the information about Tor browser and others methods that concern by accessing to dark web. In addition, we analyzed the famous markets that are used for drugs trading and we have determined the permissions that are permitted for any member in the trading markets. Based on the mentioned information we built ten plans for getting the information about marijuana where each plan concerns by one market from the registration to the access to specific marijuana information.

b. System Design

In this phase, all the ten plans that have analyzed in the previous phase have been converted into flow chart diagrams using Unified Modelling Language (UML) class diagram. Those classes explain the steps of each plan from the beginning to the end. From using the link until getting the information of each drug in each market. Moreover, we normalized the ten plans into one general algorithm to ease the programming process as flow chart diagram.

c. System Development

In this phase, we will write the code according to the pervious algorithms and design the required interfaces. Then, implementing the system and evaluating the outcomes whether they achieve the goal of the system or not by testing the system many times.

d. System Evaluation

In this phase we will evaluate the agent system in term of correctness and accuracy and others non-functional requirements whether the system achieve the non-functional requirements or not.

e. System Documentation

In this phase, we will concern by document the pervious phase's work that will be used in future developments or for maintenance purposes. In addition, building user guides that help the users for using the system.

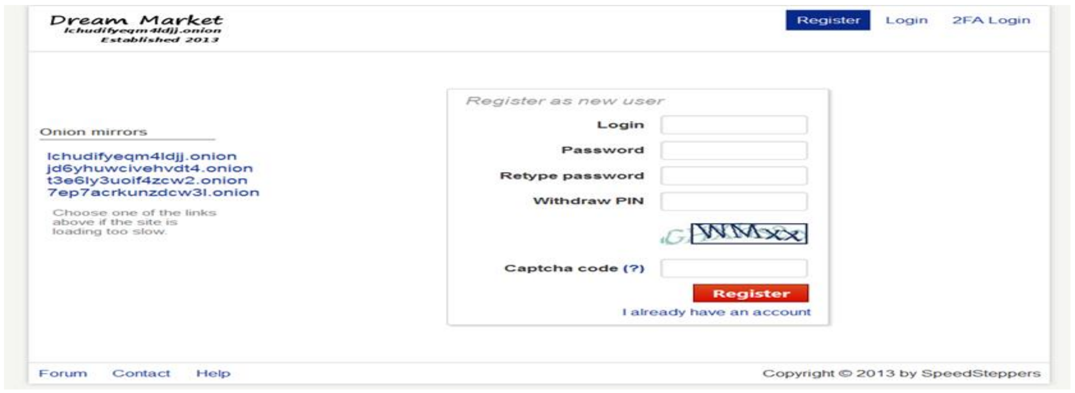
4 Results and Discussion

4.1 The Steps in Accessing Dark Web

From our experience in accessing the dark web, we have identified how to access the dark web and provide the UML diagram based on the plan implemented. The UML diagram become a reference on how to develop software agent in dark web environment.

4.1.1 Plan 1: Accessing Dream Market

i. Download the TOR browser form the URL, https://www.torproject.org/download/download.html.en
ii. Run the Tor browser
iii. Enter the following link in Tor browser http://lchudifyeqm4ldjj.onion/
iv. Register as a user to browse the website
v. After that will register in dream in below screen.



Dream Market
lchudifyeqm4ldjj.onion
Established 2013

Register Login 2FA Login

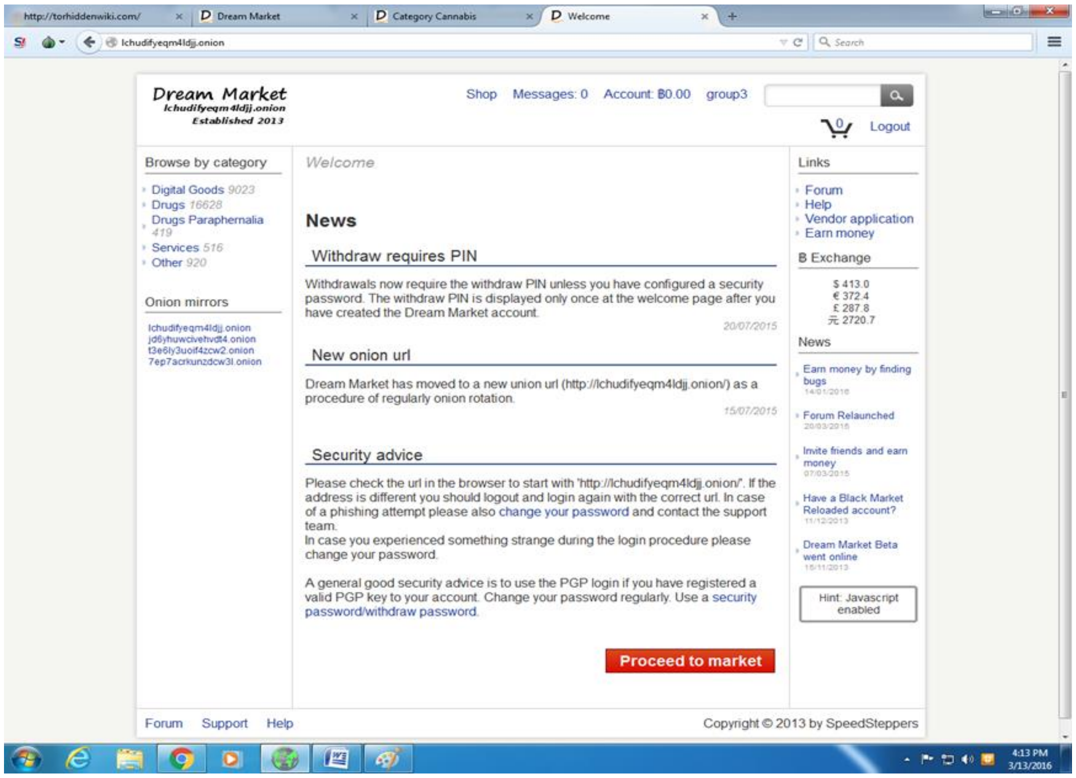
Onion mirrors
lchudifyeqm4ldjj.onion
jd6yhuwcivehvdt4.onion
t3e6ly3uoif4zcw2.onion
7ep7acrkunzdcw3l.onion
Choose one of the links above if the site is loading too slow.

Register as new user
Login
Password
Retype password
Withdraw PIN
Captcha code (?)
Register
I already have an account

Forum Contact Help
Copyright © 2013 by SpeedSteppers

Figure 3: Registration page in Dream Market

vi. The below screen will appear after registration. Click on drug category to get the list of the drug


Dream Market
lchudifyeqm4ldjj.onion
Established 2013

Shop Messages: 0 Account: Ƀ0.00 group3

Logout

Browse by category
- Digital Goods 9023
- Drugs 16628
- Drugs Paraphernalia 419
- Services 516
- Other 920

Onion mirrors
lchudifyeqm4ldjj.onion
jd6yhuwcivehvdt4.onion
t3e6ly3uoif4zcw2.onion
7ep7acrkunzdcw3l.onion

Welcome

News

Withdraw requires PIN

Withdrawals now require the withdraw PIN unless you have configured a security password. The withdraw PIN is displayed only once at the welcome page after you have created the Dream Market account.
20/07/2015

New onion url

Dream Market has moved to a new union url (http://lchudifyeqm4ldjj.onion/) as a procedure of regularly onion rotation.
15/07/2015

Security advice

Please check the url in the browser to start with "http://lchudifyeqm4ldjj.onion/". If the address is different you should logout and login again with the correct url. In case of a phishing attempt please also change your password and contact the support team.
In case you experienced something strange during the login procedure please change your password.

A general good security advice is to use the PGP login if you have registered a valid PGP key to your account. Change your password regularly. Use a security password/withdraw password.

Proceed to market

Links
- Forum
- Help
- Vendor application
- Earn money

Ƀ Exchange
$ 413.0
€ 372.4
£ 287.8
元 2720.7

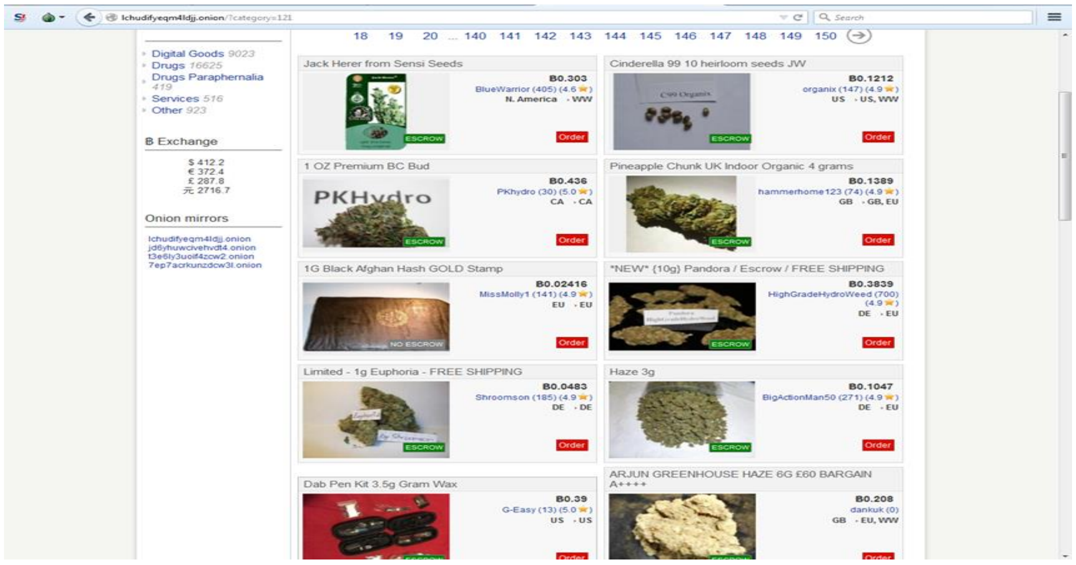
News
- Earn money by finding bugs 14/01/2016
- Forum Relaunched 20/03/2015
- Invite friends and earn money 07/03/2015
- Have a Black Market Reloaded account? 11/12/2013
- Dream Market Beta went online 15/11/2013

Hint: Javascript enabled

Forum Support Help Copyright © 2013 by SpeedSteppers

Figure 4: Dream Market Interface

vii. After that, click on cannabis to get the selection of cannabis on the market. The list of cannabis on the market listed as in Figure 5.


lchudifyeqm4ldjj.onion/?category=121

18 19 20 ... 140 141 142 143 144 145 146 147 148 149 150

- Digital Goods 9023
- Drugs 16625
- Drugs Paraphernalia 419
- Services 516
- Other 923

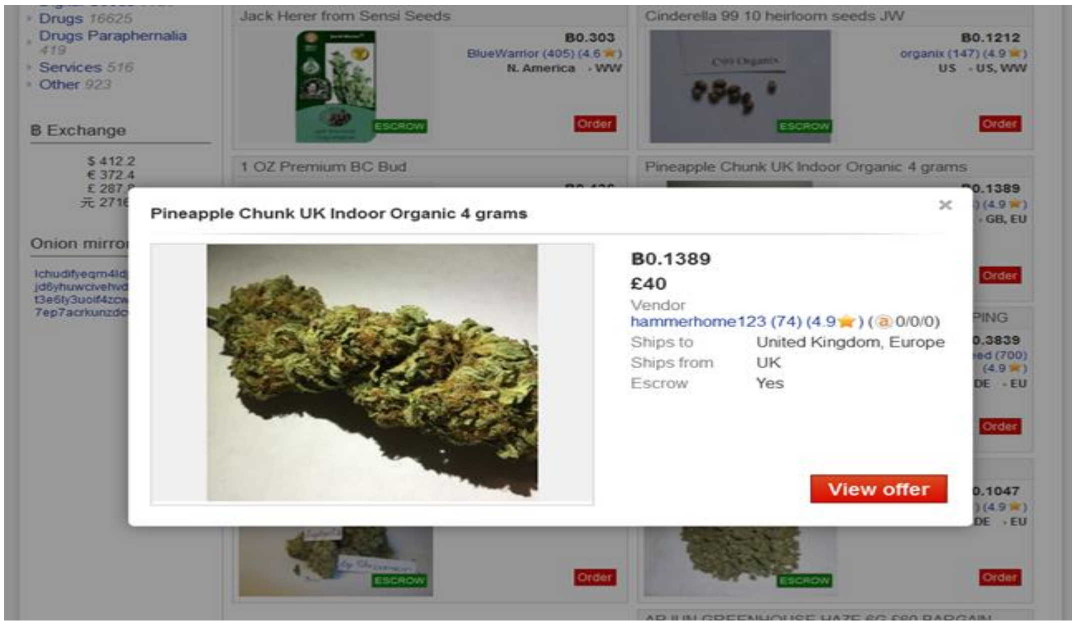
Ƀ Exchange
$ 412.2
€ 372.4
£ 287.8
元 2716.7

Onion mirrors
lchudifyeqm4ldjj.onion
jd6yhuwcivehvdt4.onion
t3e6ly3uoif4zcw2.onion
7ep7acrkunzdcw3l.onion

Item	Price	Vendor	Ships
Jack Herer from Sensi Seeds	Ƀ0.303	BlueWarrior (405) (4.6 ★)	N. America - WW
Cinderella 99 10 heirloom seeds JW	Ƀ0.1212	organix (147) (4.9 ★)	US - US, WW
1 OZ Premium BC Bud	Ƀ0.436	PKhydro (30) (5.0 ★)	CA - CA
Pineapple Chunk UK Indoor Organic 4 grams	Ƀ0.1389	hammerhome123 (74) (4.9 ★)	GB - GB, EU
1G Black Afghan Hash GOLD Stamp	Ƀ0.02416	MissMolly1 (141) (4.9 ★)	EU - EU
NEW {10g} Pandora / Escrow / FREE SHIPPING	Ƀ0.3839	HighGradeHydroWeed (700) (4.9 ★)	DE - EU
Limited - 1g Euphoria - FREE SHIPPING	Ƀ0.0483	Shroomson (185) (4.9 ★)	DE - DE
Haze 3g	Ƀ0.1047	BigActionMan50 (271) (4.9 ★)	DE - EU
Dab Pen Kit 3.5g Gram Wax	Ƀ0.39	G-Easy (13) (5.0 ★)	US - US
ARJUN GREENHOUSE HAZE 6G £60 BARGAIN A++++	Ƀ0.208	dankuk (0)	GB - EU, WW

Figure 5: List of Cannabis

viii. Click the order button to view the price of the item. Figure 6 show the cannabis information.



Pineapple Chunk UK Indoor Organic 4 grams

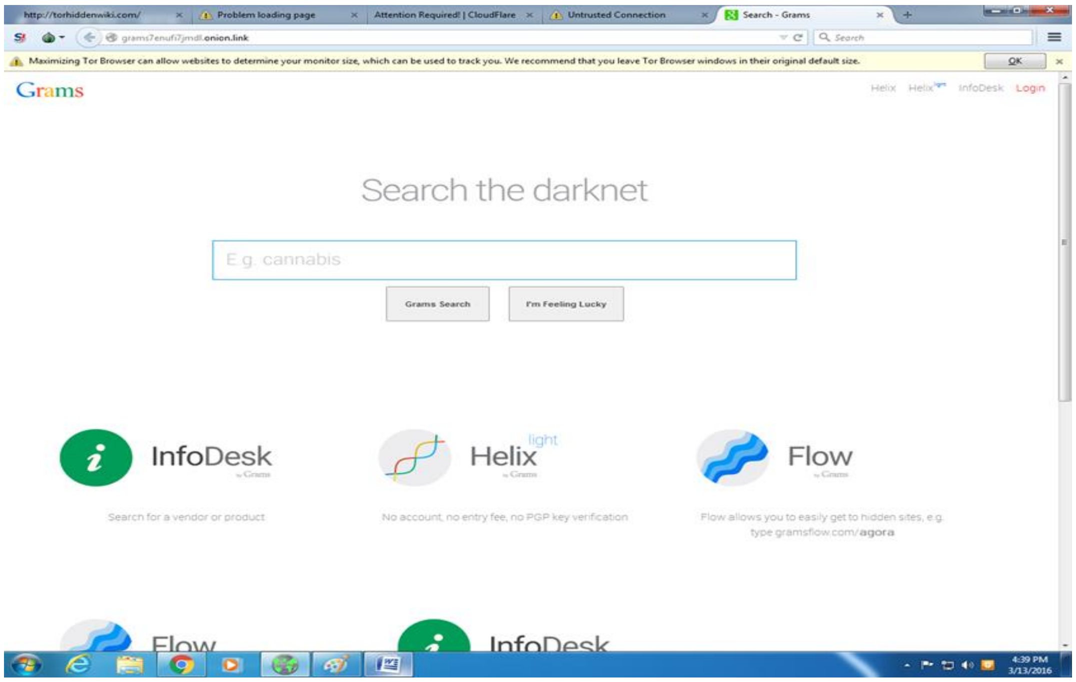
B0.1389
£40

Vendor	hammerhome123 (74) (4.9) (0/0/0)
Ships to	United Kingdom, Europe
Ships from	UK
Escrow	Yes

Figure 6: Cannabis Information

4.1.2 Plan 2: Accessing Grams Market

i. Enter the following link in Tor browser, http://grams7enufi7jmdl.onion.link/
ii. The following screen will appear.



Maximizing Tor Browser can allow websites to determine your monitor size, which can be used to track you. We recommend that you leave Tor Browser windows in their original default size.

Search the darknet

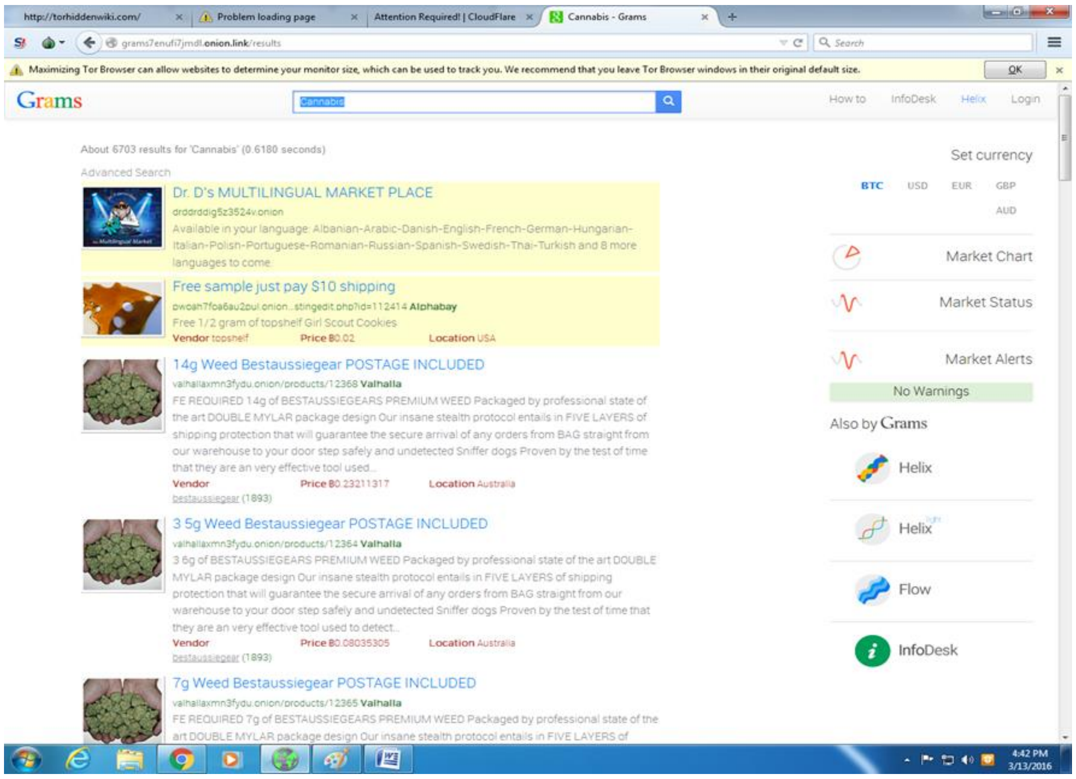
Search for a vendor or product

No account, no entry fee, no PGP key verification

Flow allows you to easily get to hidden sites, e.g. type gramsflow.com/agora

Figure 7: Grams market interface.

iii. After enter cannabis to get the list of cannabis. The following screen will appear as Figure 8.



http://torhiddenwiki.com/ | Problem loading page | Attention Required! | CloudFlare | Cannabis - Grams

grams7enufi7jmdl.onion.link/results

Maximizing Tor Browser can allow websites to determine your monitor size, which can be used to track you. We recommend that you leave Tor Browser windows in their original default size. OK

Grams | Cannabis | How to | InfoDesk | Helix | Login

About 6703 results for 'Cannabis' (0.6180 seconds)

Advanced Search

Dr. D's MULTILINGUAL MARKET PLACE
drddrddig5z3524v.onion
Available in your language: Albanian-Arabic-Danish-English-French-German-Hungarian-Italian-Polish-Portuguese-Romanian-Russian-Spanish-Swedish-Thai-Turkish and 8 more languages to come.

Free sample just pay $10 shipping
owoah7foa6au2oul.onion...stingedit.php?id=112414 **Alphabay**
Free 1/2 gram of topshelf Girl Scout Cookies
Vendor topshelf **Price** B0.02 **Location** USA

14g Weed Bestaussiegear POSTAGE INCLUDED
valhallaxmn3fydu.onion/products/12368 **Valhalla**
FE REQUIRED 14g of BESTAUSSIEGEARS PREMIUM WEED Packaged by professional state of the art DOUBLE MYLAR package design Our insane stealth protocol entails in FIVE LAYERS of shipping protection that will guarantee the secure arrival of any orders from BAG straight from our warehouse to your door step safely and undetected Sniffer dogs Proven by the test of time that they are an very effective tool used...
Vendor bestaussiegear (1893) **Price** B0.23211317 **Location** Australia

3 5g Weed Bestaussiegear POSTAGE INCLUDED
valhallaxmn3fydu.onion/products/12364 **Valhalla**
3 6g of BESTAUSSIEGEARS PREMIUM WEED Packaged by professional state of the art DOUBLE MYLAR package design Our insane stealth protocol entails in FIVE LAYERS of shipping protection that will guarantee the secure arrival of any orders from BAG straight from our warehouse to your door step safely and undetected Sniffer dogs Proven by the test of time that they are an very effective tool used to detect...
Vendor bestaussiegear (1893) **Price** B0.08035305 **Location** Australia

7g Weed Bestaussiegear POSTAGE INCLUDED
valhallaxmn3fydu.onion/products/12365 **Valhalla**
FE REQUIRED 7g of BESTAUSSIEGEARS PREMIUM WEED Packaged by professional state of the art DOUBLE MYLAR package design Our insane stealth protocol entails in FIVE LAYERS of

Set currency: BTC USD EUR GBP AUD

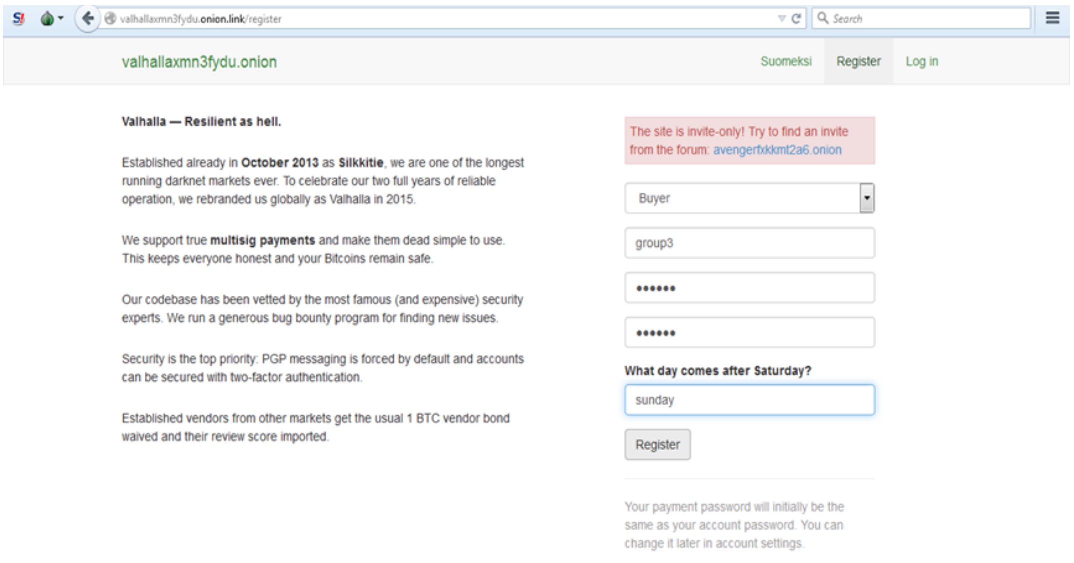
Market Chart | Market Status | Market Alerts | No Warnings

Also by Grams: Helix | Helix light | Flow | InfoDesk

4:42 PM 3/13/2016

Figure 8: List of Cannabis in Grams market.

iv. Register as a user to buy the drug. Click on **register** for registration. Complete the required information. The screen as in Figure 9.



valhallaxmn3fydu.onion.link/register

valhallaxmn3fydu.onion | Suomeksi | Register | Log in

Valhalla — Resilient as hell.

Established already in **October 2013** as **Silkkitie**, we are one of the longest running darknet markets ever. To celebrate our two full years of reliable operation, we rebranded us globally as Valhalla in 2015.

We support true **multisig payments** and make them dead simple to use. This keeps everyone honest and your Bitcoins remain safe.

Our codebase has been vetted by the most famous (and expensive) security experts. We run a generous bug bounty program for finding new issues.

Security is the top priority: PGP messaging is forced by default and accounts can be secured with two-factor authentication.

Established vendors from other markets get the usual 1 BTC vendor bond waived and their review score imported.

The site is invite-only! Try to find an invite from the forum: avengerfxkkmt2a6.onion

Buyer

group3

••••••

••••••

What day comes after Saturday?

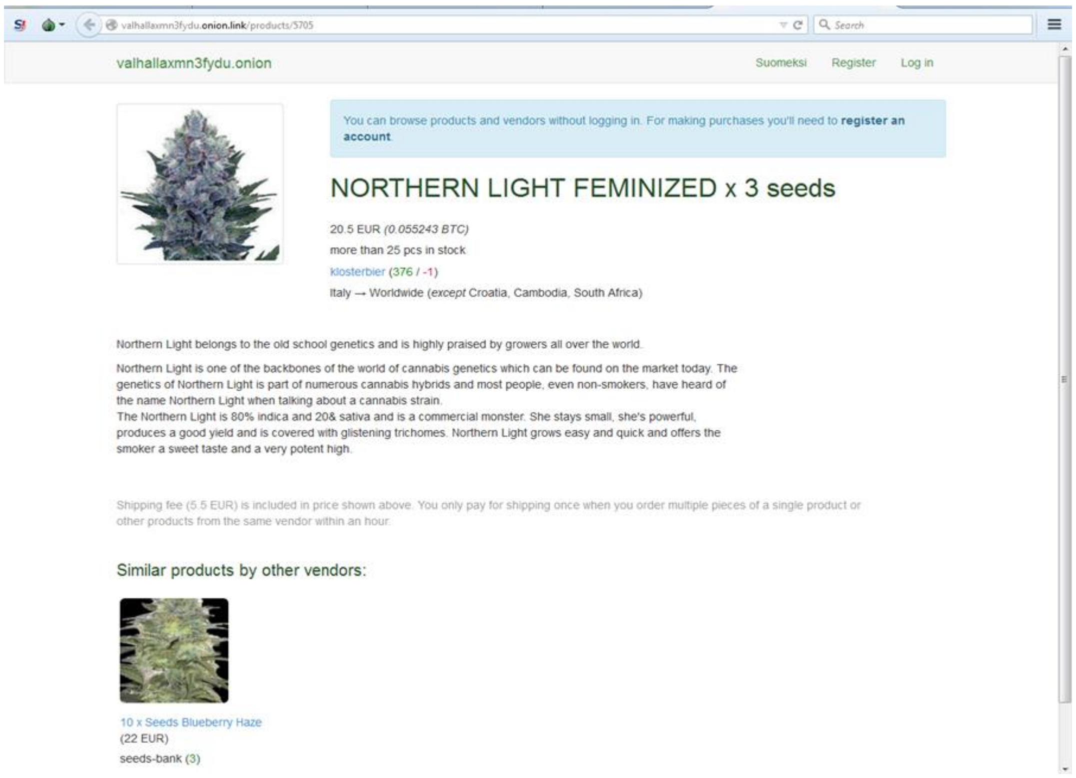
sunday

Register

Your payment password will initially be the same as your account password. You can change it later in account settings.

Figure 9: Grams Market Registration

v. The following information can be obtain when click on the list of cannabis.


valhallaxmn3fydu.onion

You can browse products and vendors without logging in. For making purchases you'll need to **register an account**

NORTHERN LIGHT FEMINIZED x 3 seeds

20.5 EUR (*0.055243 BTC*)
more than 25 pcs in stock
klosterbier (376 / -1)
Italy → Worldwide (*except* Croatia, Cambodia, South Africa)

Northern Light belongs to the old school genetics and is highly praised by growers all over the world.

Northern Light is one of the backbones of the world of cannabis genetics which can be found on the market today. The genetics of Northern Light is part of numerous cannabis hybrids and most people, even non-smokers, have heard of the name Northern Light when talking about a cannabis strain.
The Northern Light is 80% indica and 20& sativa and is a commercial monster. She stays small, she's powerful, produces a good yield and is covered with glistening trichomes. Northern Light grows easy and quick and offers the smoker a sweet taste and a very potent high.

Shipping fee (5.5 EUR) is included in price shown above. You only pay for shipping once when you order multiple pieces of a single product or other products from the same vendor within an hour.

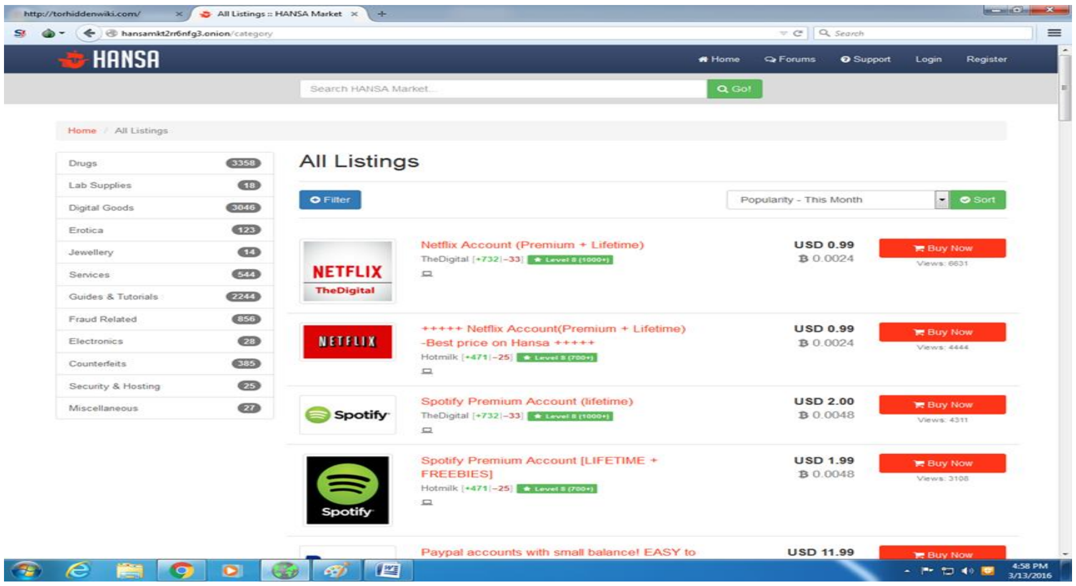
Similar products by other vendors:

10 x Seeds Blueberry Haze
(22 EUR)
seeds-bank (3)

Figure 10: Example of Cannabis in Grams market.

4.1.3 Plan 3: Accessing Hansa Market

i. Use the following link in Tor browser, http://hansamkt2rr6nfg3.onion/category
ii. The following screen will appear.


All Listings

Drugs	3358
Lab Supplies	18
Digital Goods	3046
Erotica	123
Jewellery	14
Services	544
Guides & Tutorials	2244
Fraud Related	856
Electronics	28
Counterfeits	385
Security & Hosting	25
Miscellaneous	27

Netflix Account (Premium + Lifetime)
TheDigital [+732|-33] Level 8 (1000+)
USD 0.99
Ƀ 0.0024
Views: 6631

+++++ Netflix Account(Premium + Lifetime) -Best price on Hansa +++++
Hotmilk [+471|-25] Level 8 (700+)
USD 0.99
Ƀ 0.0024
Views: 4444

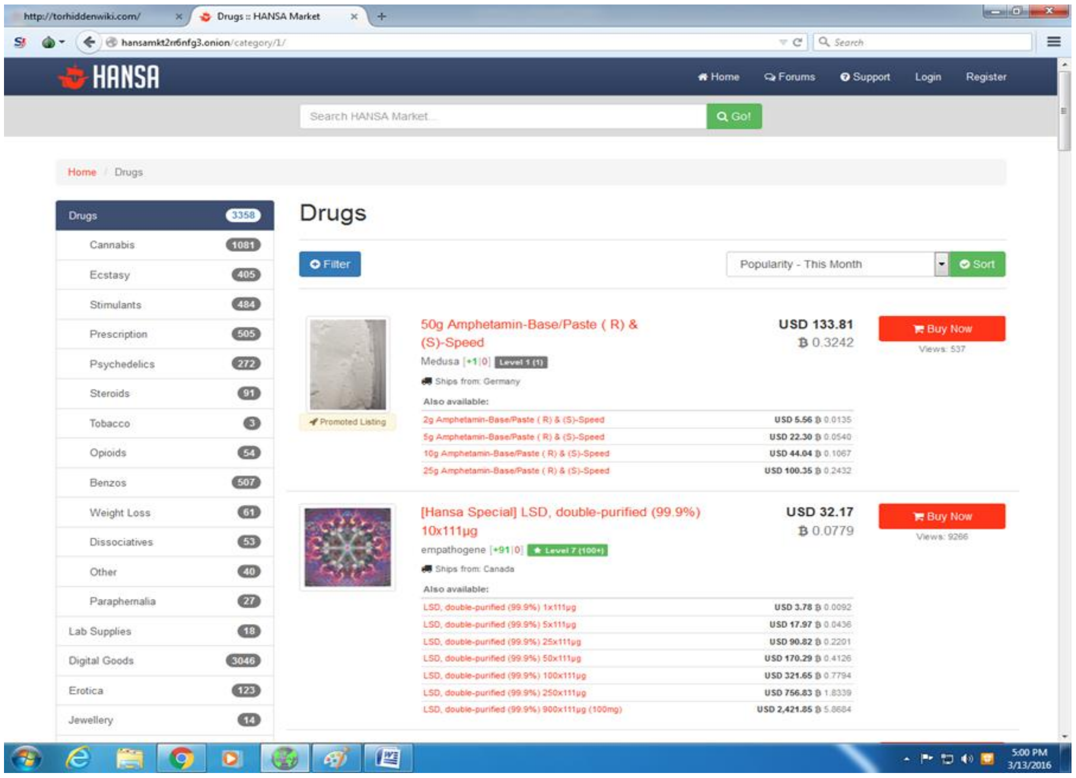
Spotify Premium Account (lifetime)
TheDigital [+732|-33] Level 8 (1000+)
USD 2.00
Ƀ 0.0048
Views: 4311

Spotify Premium Account [LIFETIME + FREEBIES]
Hotmilk [+471|-25] Level 8 (700+)
USD 1.99
Ƀ 0.0048
Views: 3108

Paypal accounts with small balance! EASY to
USD 11.99

Figure 11: Hansa Market Interface

iii. After select drug from the listing to display list of drug, the below screen will appear.



Drugs

50g Amphetamin-Base/Paste (R) & (S)-Speed — USD 133.81 — Ƀ 0.3242 — Views: 537
Medusa [+1|0] Level 1 (1)
Ships from: Germany
Also available:

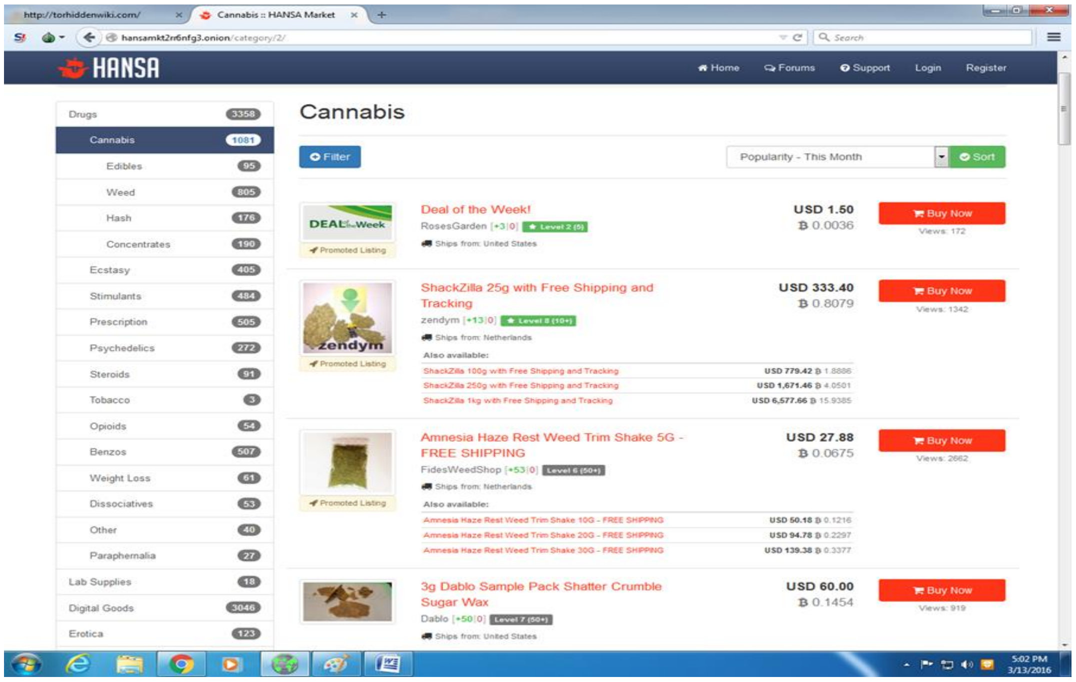
2g Amphetamin-Base/Paste (R) & (S)-Speed	USD 5.56 Ƀ 0.0135
5g Amphetamin-Base/Paste (R) & (S)-Speed	USD 22.30 Ƀ 0.0540
10g Amphetamin-Base/Paste (R) & (S)-Speed	USD 44.04 Ƀ 0.1067
25g Amphetamin-Base/Paste (R) & (S)-Speed	USD 100.35 Ƀ 0.2432

[Hansa Special] LSD, double-purified (99.9%) 10x111µg — USD 32.17 — Ƀ 0.0779 — Views: 9266
empathogene [+91|0] Level 7 (100+)
Ships from: Canada
Also available:

LSD, double-purified (99.9%) 1x111µg	USD 3.78 Ƀ 0.0092
LSD, double-purified (99.9%) 5x111µg	USD 17.97 Ƀ 0.0436
LSD, double-purified (99.9%) 25x111µg	USD 90.82 Ƀ 0.2201
LSD, double-purified (99.9%) 50x111µg	USD 170.29 Ƀ 0.4126
LSD, double-purified (99.9%) 100x111µg	USD 321.65 Ƀ 0.7794
LSD, double-purified (99.9%) 250x111µg	USD 756.83 Ƀ 1.8339
LSD, double-purified (99.9%) 900x111µg (100mg)	USD 2,421.85 Ƀ 5.8684

Figure 12: List of Drugs in Hansa market.

iv. After select cannabis from the list, different type of cannabis will display as below screen.



Cannabis

Deal of the Week! — USD 1.50 — Ƀ 0.0036 — Views: 172
RosesGarden [+3|0] Level 2 (5)
Ships from: United States

ShackZilla 25g with Free Shipping and Tracking — USD 333.40 — Ƀ 0.8079 — Views: 1342
zendym [+13|0] Level 8 (10+)
Ships from: Netherlands
Also available:

ShackZilla 100g with Free Shipping and Tracking	USD 779.42 Ƀ 1.8886
ShackZilla 250g with Free Shipping and Tracking	USD 1,671.46 Ƀ 4.0501
ShackZilla 1kg with Free Shipping and Tracking	USD 6,577.66 Ƀ 15.9385

Amnesia Haze Rest Weed Trim Shake 5G - FREE SHIPPING — USD 27.88 — Ƀ 0.0675 — Views: 2662
FidesWeedShop [+53|0] Level 6 (50+)
Ships from: Netherlands
Also available:

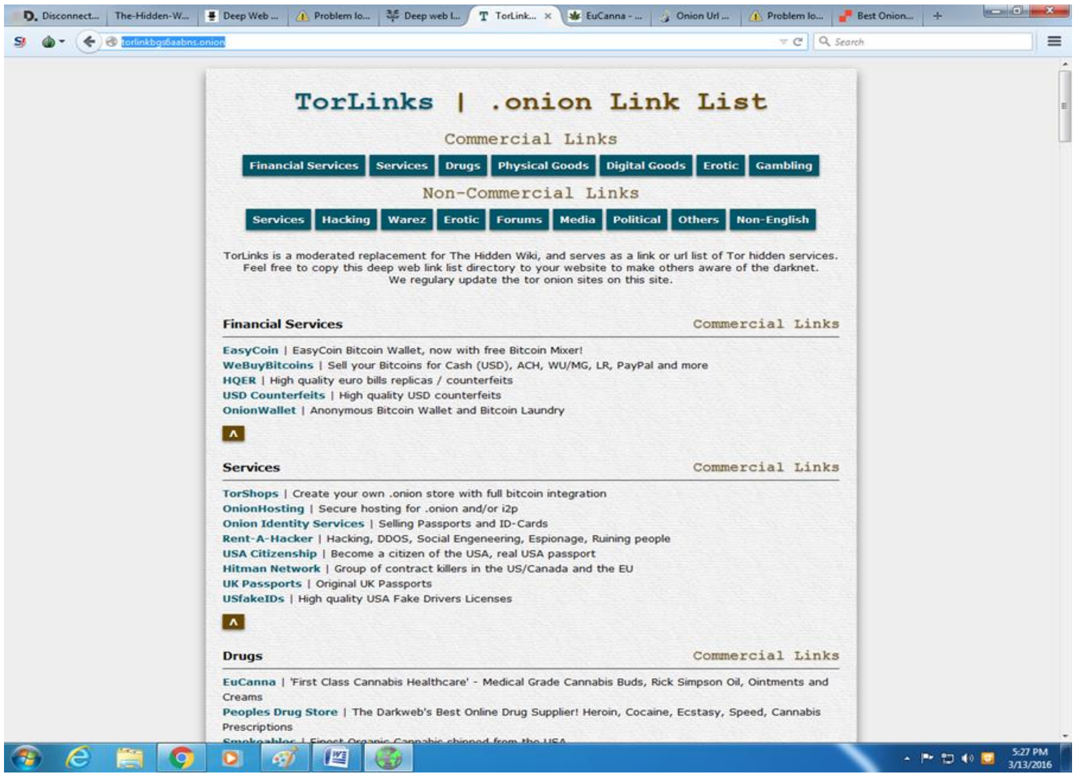
Amnesia Haze Rest Weed Trim Shake 10G - FREE SHIPPING	USD 50.18 Ƀ 0.1216
Amnesia Haze Rest Weed Trim Shake 20G - FREE SHIPPING	USD 94.78 Ƀ 0.2297
Amnesia Haze Rest Weed Trim Shake 30G - FREE SHIPPING	USD 139.38 Ƀ 0.3377

3g Dablo Sample Pack Shatter Crumble Sugar Wax — USD 60.00 — Ƀ 0.1454 — Views: 919
Dablo [+50|0] Level 7 (50+)
Ships from: United States

Figure 13: Example of Cannabis in Hansa market

4.1.4 Plan 4: Accessing Torlink Market

i. We used the following link in Tor browser, http://torlinkbgs6aabns.onion/
ii. The following screen will appear.


torlinkbgs6aabns.onion

TorLinks | .onion Link List

Commercial Links

Financial Services | Services | Drugs | Physical Goods | Digital Goods | Erotic | Gambling

Non-Commercial Links

Services | Hacking | Warez | Erotic | Forums | Media | Political | Others | Non-English

TorLinks is a moderated replacement for The Hidden Wiki, and serves as a link or url list of Tor hidden services. Feel free to copy this deep web link list directory to your website to make others aware of the darknet. We regulary update the tor onion sites on this site.

Financial Services — Commercial Links

EasyCoin | EasyCoin Bitcoin Wallet, now with free Bitcoin Mixer!
WeBuyBitcoins | Sell your Bitcoins for Cash (USD), ACH, WU/MG, LR, PayPal and more
HQER | High quality euro bills replicas / counterfeits
USD Counterfeits | High quality USD counterfeits
OnionWallet | Anonymous Bitcoin Wallet and Bitcoin Laundry

Services — Commercial Links

TorShops | Create your own .onion store with full bitcoin integration
OnionHosting | Secure hosting for .onion and/or i2p
Onion Identity Services | Selling Passports and ID-Cards
Rent-A-Hacker | Hacking, DDOS, Social Engeneering, Espionage, Ruining people
USA Citizenship | Become a citizen of the USA, real USA passport
Hitman Network | Group of contract killers in the US/Canada and the EU
UK Passports | Original UK Passports
USfakeIDs | High quality USA Fake Drivers Licenses

Drugs — Commercial Links

EuCanna | 'First Class Cannabis Healthcare' - Medical Grade Cannabis Buds, Rick Simpson Oil, Ointments and Creams
Peoples Drug Store | The Darkweb's Best Online Drug Supplier! Heroin, Cocaine, Ecstasy, Speed, Cannabis Prescriptions

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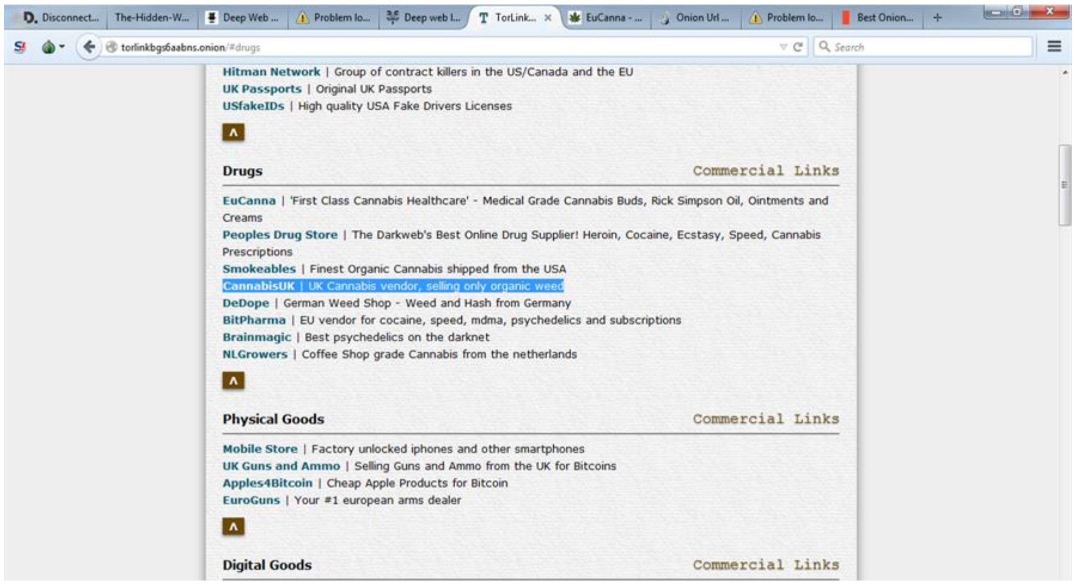
Figure 14: Interface for TorLink market

iii. After Select drug from tab button to display list of drug, list of drug's seller are listed.
iv. Click on CannabisUK to list cannabis from UK's seller.


torlinkbgs6aabns.onion/#drugs

Hitman Network | Group of contract killers in the US/Canada and the EU
UK Passports | Original UK Passports
USfakeIDs | High quality USA Fake Drivers Licenses

Drugs — Commercial Links

EuCanna | 'First Class Cannabis Healthcare' - Medical Grade Cannabis Buds, Rick Simpson Oil, Ointments and Creams
Peoples Drug Store | The Darkweb's Best Online Drug Supplier! Heroin, Cocaine, Ecstasy, Speed, Cannabis Prescriptions
Smokeables | Finest Organic Cannabis shipped from the USA
CannabisUK | UK Cannabis vendor, selling only organic weed
DeDope | German Weed Shop - Weed and Hash from Germany
BitPharma | EU vendor for cocaine, speed, mdma, psychedelics and subscriptions
Brainmagic | Best psychedelics on the darknet
NLGrowers | Coffee Shop grade Cannabis from the netherlands

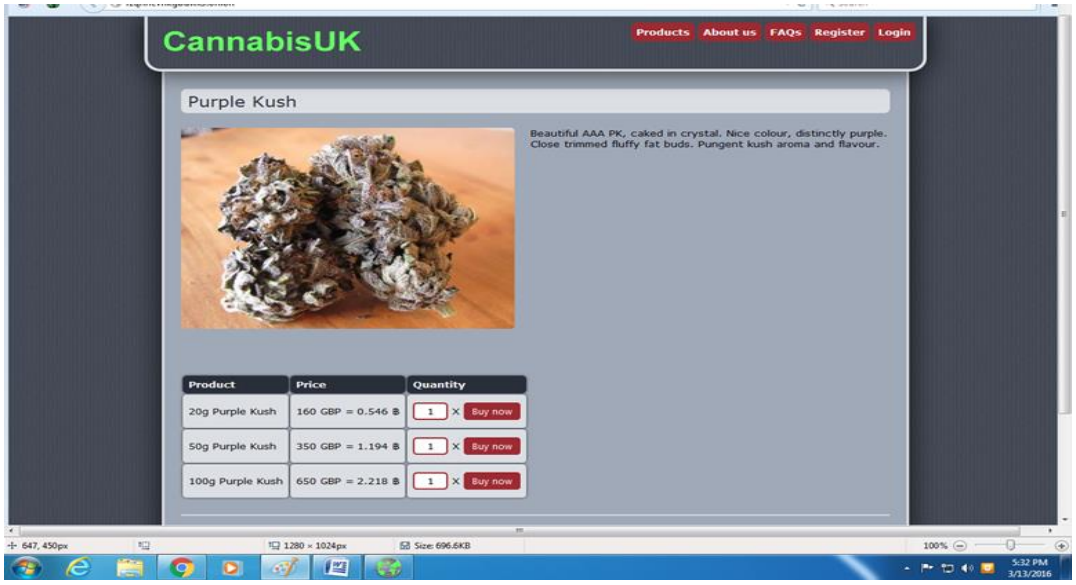
Physical Goods — Commercial Links

Mobile Store | Factory unlocked iphones and other smartphones
UK Guns and Ammo | Selling Guns and Ammo from the UK for Bitcoins
Apples4Bitcoin | Cheap Apple Products for Bitcoin
EuroGuns | Your #1 european arms dealer

Digital Goods — Commercial Links

Figure 15: List of Drugs in TorLink Market.

v. Different type of cannabis from UK will be listed as below screen.



Purple Kush

Beautiful AAA PK, caked in crystal. Nice colour, distinctly purple. Close trimmed fluffy fat buds. Pungent kush aroma and flavour.

Product	Price	Quantity
20g Purple Kush	160 GBP = 0.546 ฿	1 × Buy now
50g Purple Kush	350 GBP = 1.194 ฿	1 × Buy now
100g Purple Kush	650 GBP = 2.218 ฿	1 × Buy now

Figure 16: Example of Cannabis in TorLink market.

4.2 UML Diagram based on Number of Plans

In our research we have identify 4 plans for accessing drugs market in dark web. Each plan access to one market. We have used class diagram to explain each plan from the beginning to the end. The relationship between the components through the plan as in Figure 17, 18, 19 and 20.

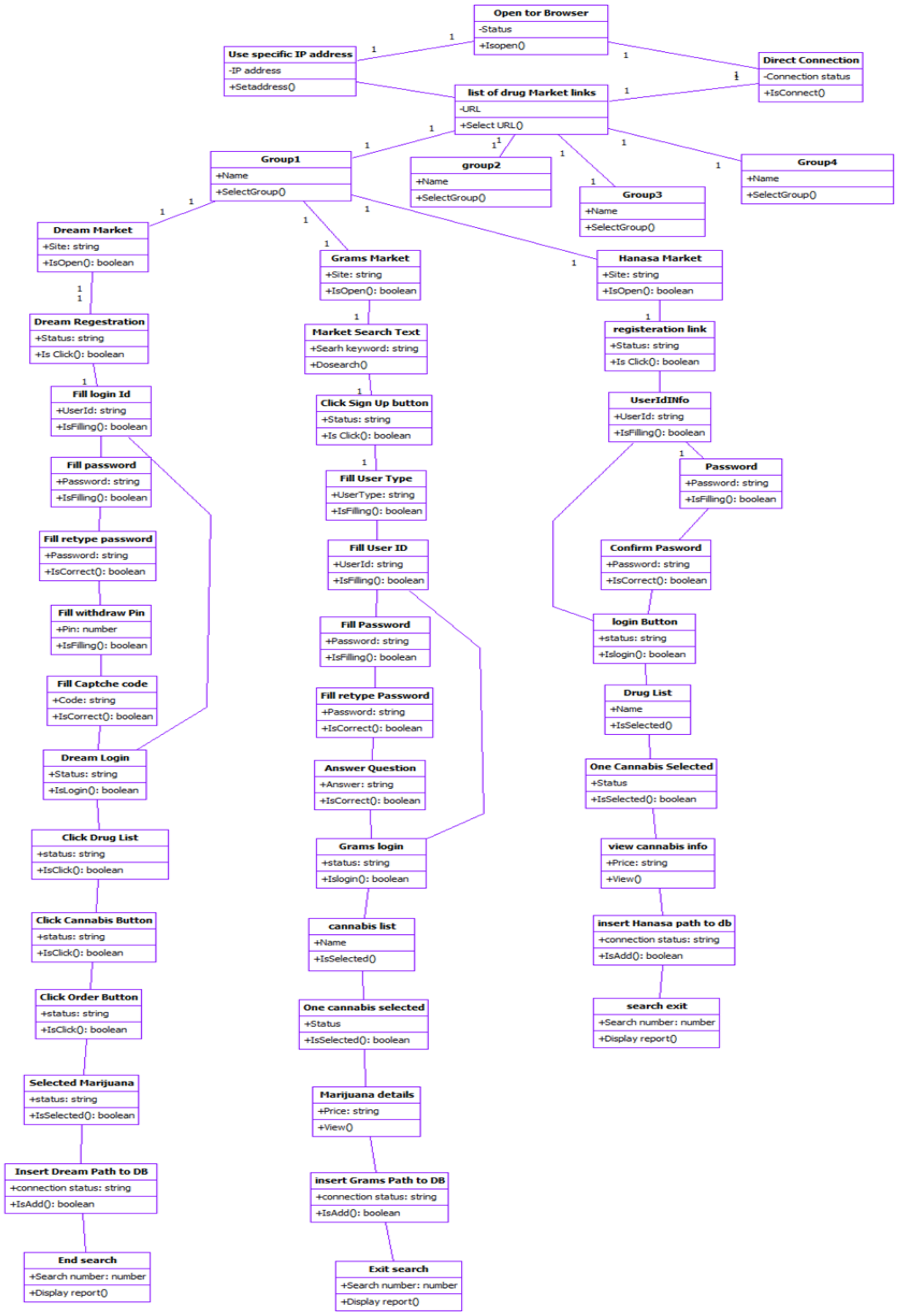


Figure 17: Class Diagram for Hansa and Grams Market.

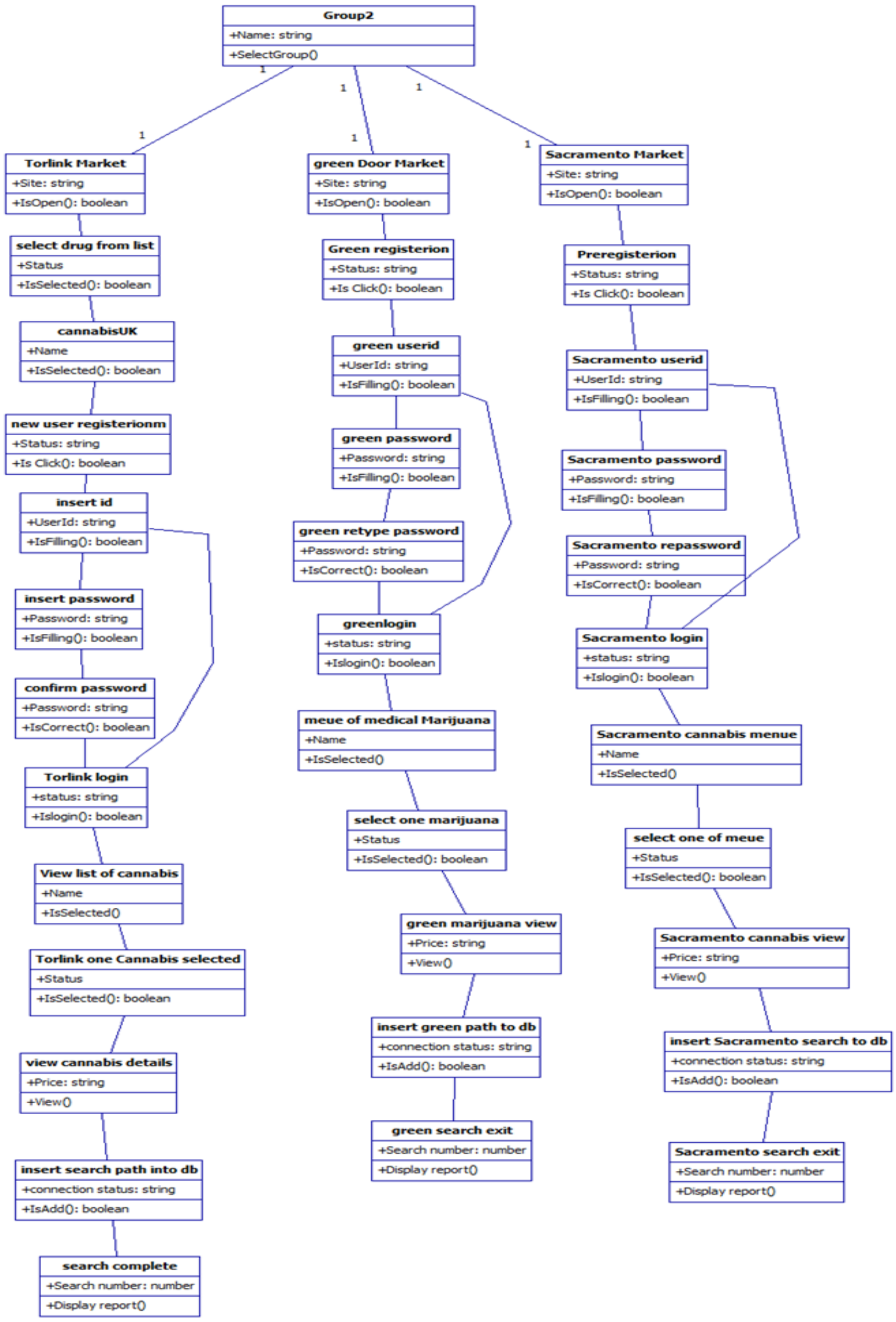


Figure 18: Class Diagram for TorLink, Door Green and Sacramento Market.

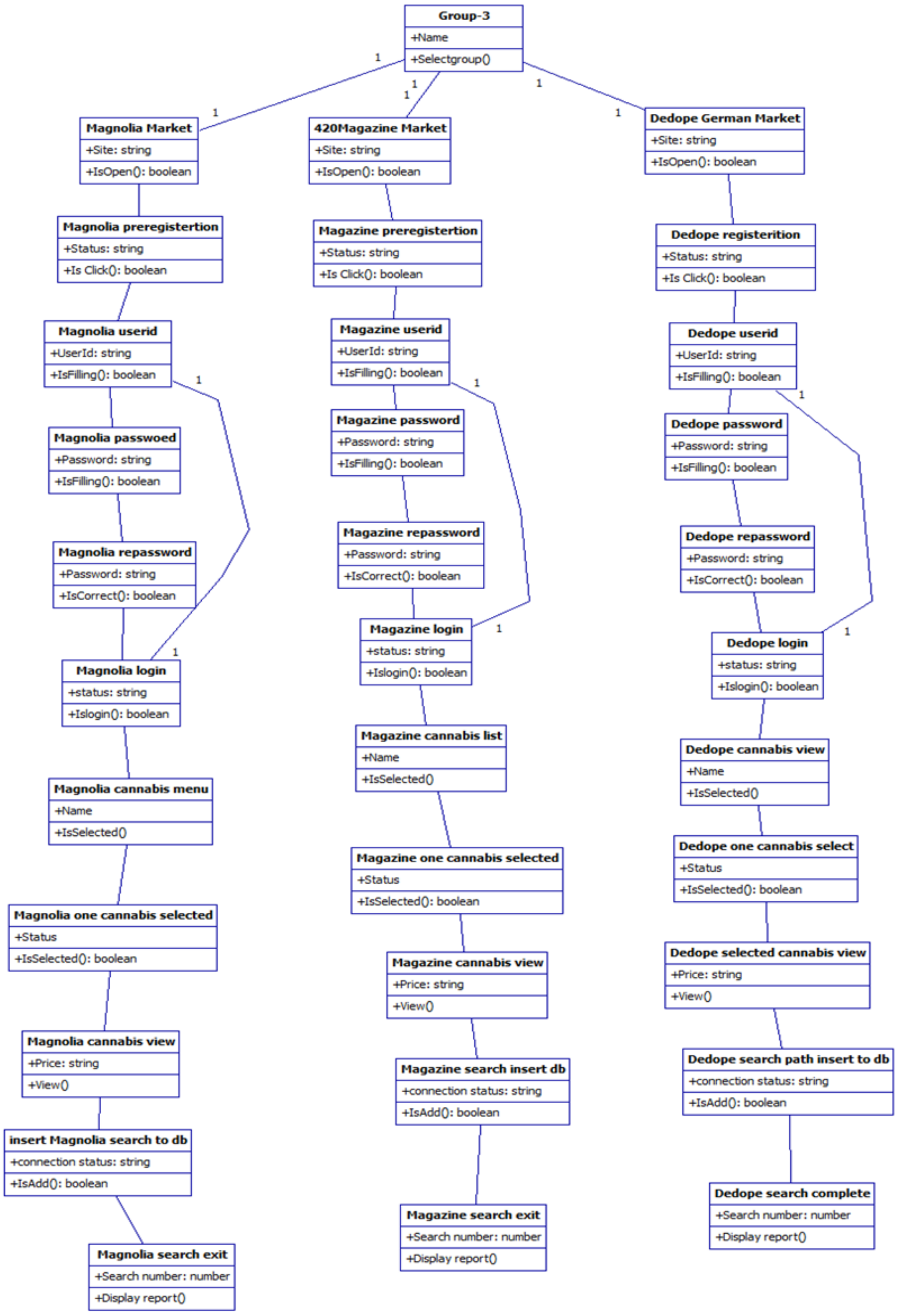


Figure 19: Class Diagram for Magnolia, Magazine and Dedope German Market.

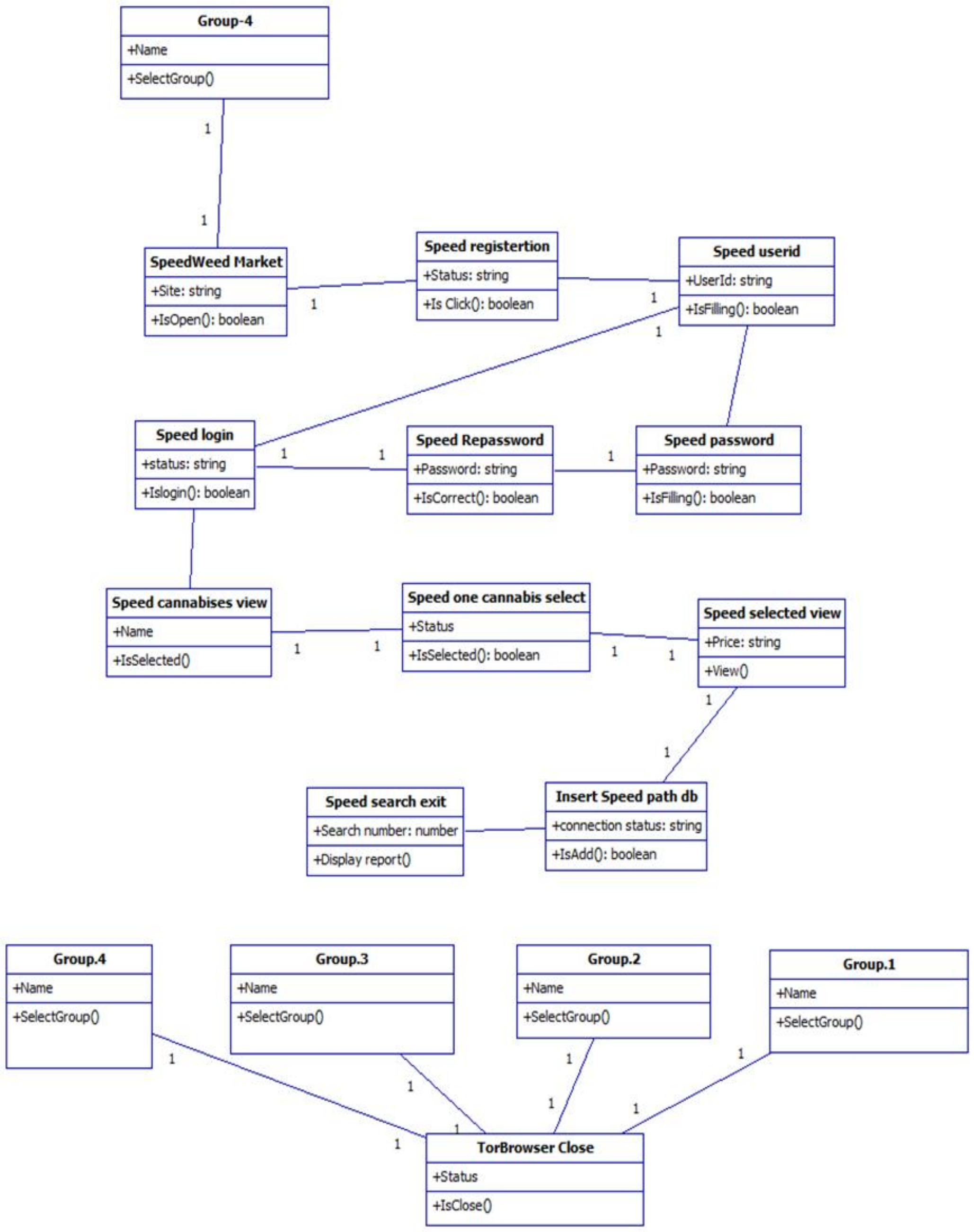


Figure 20: Class Diagram for SpeedWeed Market.

4.3 Normalised UML Diagram

In order to provide general plan in accessing the dark web, we have normalized the previous 4 plans to new class diagram. In this task we converted the previous plans to group of class that can be used in building the agent. The normalize class diagram plan is as Figure 21.

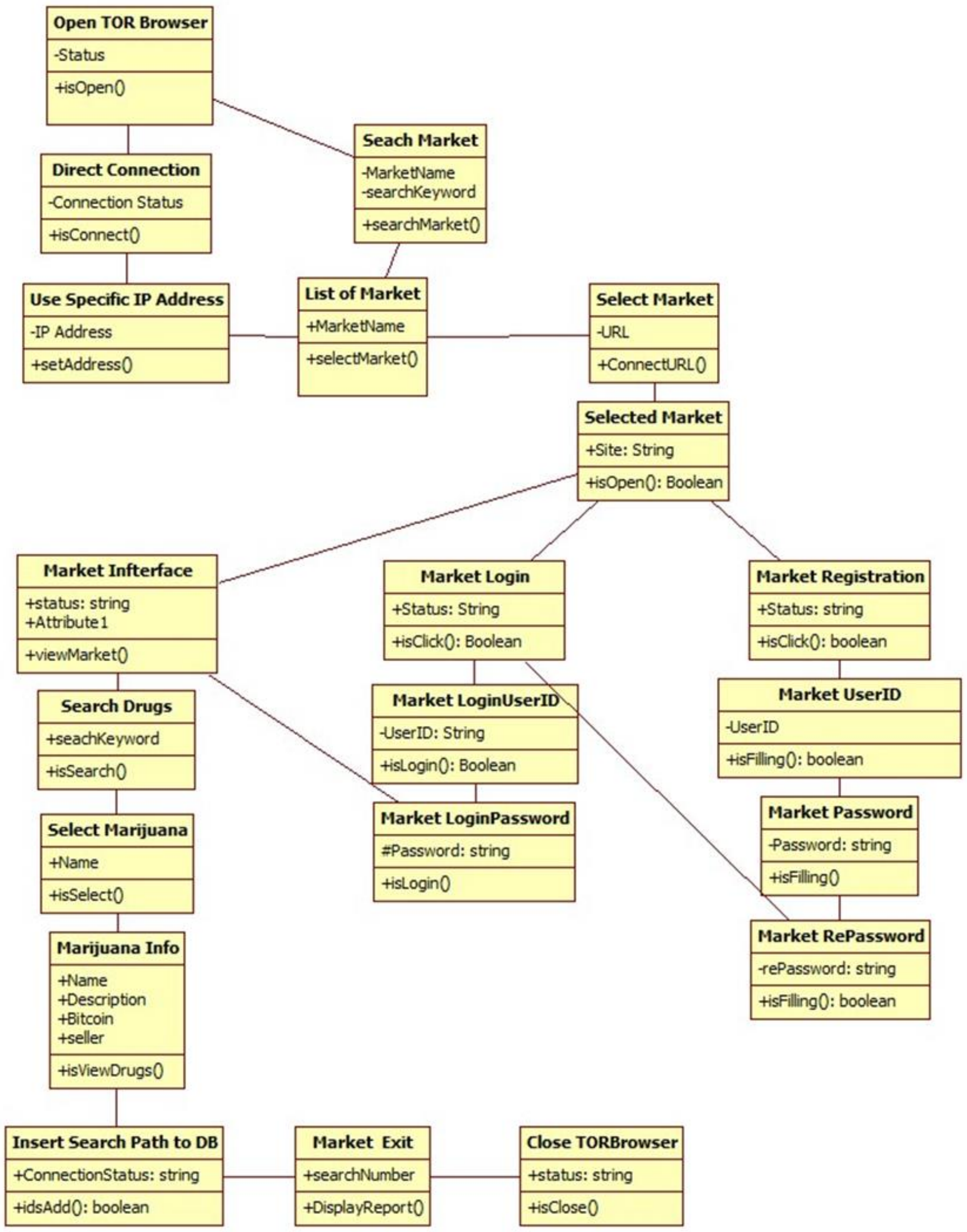


Figure 21: Normalize Class diagram.

4.4 Justification of the normalized UML

Based on the previous plan, there are some redundancy on the way to access the drug markets in the dark web. There are also many different ways to access the web either by using the direct link or by search using the keyword. To this matter we have normalized our UML diagram by transformed the previous plans to particle class that can be used in building the agent.

We have identified, group of classes that are redundant in the previous class diagram. The unnecessary class have remove from our diagram to elude redundancy class. Therefore, the agent task is easier to be develop and more efficient. Based on our findings, the class can be group into several group which are registration to the market, login, search the drugs, view list of drugs and view the drugs information. To this extend, we actually facilitate the process of developing agent. By grouping the class to its functionality will make the process easier by developing an agent part by part.

5 Conclusion and Future Work

5.1 Overview of the Study

This goal of this study is to view the information on the marijuana or cannabis in dark web. In attaining the objectives, the steps that are used in most of software agents' life cycle are therefore adopted. As an outcome of the methodology, we have produced a UML diagram to visualise the 4 plans that have been used. Later, the UML diagram have been normalise to reduce redundancy of the task. Therefore the normalised UML diagram can be used as a method to create algorithm of an agent to achieve the goals to view the information of drugs from dark web.

5.2 Limitation

This study only focusing in developing agent in dark web environment. The task is identified based on 4 plans that have been selected.

5.3 Future Work

Future research should focus on extending the agent's functionality to support a broader range of tasks beyond retrieving marijuana-related information. For example, agents could be developed to identify other illegal goods such as counterfeit products, or stolen data. It is also recommended to adapt the framework for use in alternative environment which may have different structures and technical requirements compared to TOR.

Integrating advanced technique such as machine learning can further enhance the agent's ability to analyze unstructured content and detect emerging trends. Additionally, future efforts should address the ethical and security challenges of accessing dark web environments.

5.4 Conclusion

We have developed 4 plans to view information of marijuana or cannabis in dark web. TOR network has been identified as one method to access dark web. The normalized UML has been developed to reduce redundancy of the class during the plan. The characteristics of an agent have been identified in this study. By way of using the normalized UML diagram hopefully it can facilitate us in developing the agents to accomplish the goal to view information of marijuana or cannabis in dark web.

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