My Pharmacy

BRD

Introduced By Group 07

Introduction

Executive Summary

My pharmacy is offering new solutions for finding your suitable drugs and getting it easily either by buying it online and delivering it to your home or to know where you can buy it from.
My pharmacy can be used by doctors,pharmacists or patients in need of some medicine, where they can build their own profiles and ease themselves to reach to each other and get their medical prescription the fastest way possible

Document Overview

This document introduce My pharmacy product study plan. It introduce general description, technical description, development plan, operation plan, cost analysis and marketing study.

Business Objectives

- Offer easy and effective online pharmacy.
- Offer huge bank of medicine and products for a many uses and purposes.
- Offer effective way of searching up and purchasing pharmaceutical products online.
- Offer an easy delivery service within the covered locations.
- Offer a free personal consultation with a skilled pharmacist or doctor.
- Offer a well studied news program to update the customer.

Background

Introduction [1]

Nowadays, Pharmacies depend only on an internal system for their workers , but imagine what could happen if we integrated this system to be an online store.

By giving each customer his own profile and his own cart while he is in home saving him a lot of time beside we can also save the money of opening new branches since most of our transactions will be online.

No more inexperienced Pharmacist to deal with,our databases are supplied with latest information from the largest medical encyclopedia, ensuring that our customer will never get a negative interaction from his drugs.

People tend to waste a lot of time and indeed money to reserve an appointment with a doctor just to examine their x-rays or even do a check-up, Now for an active user all of that pain is gone as he can join our Doctor's prescription Area.

Seeking for a specific drug but can't find it in your local stores , another problem can be solved by our Shipping all over Egypt service.

Pharmacy [2]

Pharmacy is the science and technique of preparing and dispensing drugs. It is a health profession that links health sciences with
chemical sciences and aims to ensure the safe and effective use of pharmaceutical drugs.
The scope of pharmacy practice includes more traditional roles such as compounding and dispensing medications, and it also includes more modern services related to health care, including clinical services, reviewing medications for safety and efficacy, and providing drug information. Pharmacists, therefore, are the experts on drug therapy and are the primary health professionals who optimize use of medication for the benefit of the patients.

Classification of drugs[3]

One of the key classifications is between traditional small molecule drugs; usually derived from chemical synthesis, and biologic medical products; which include recombinant proteins, vaccines, blood products used therapeutically (such as IVIG), gene therapy, and cell therapy (for instance, stem cell therapies).

Pharmaceutical or drug or medicines are classified in various other groups besides their origin on the basis of pharmacological properties like mode of action and their pharmacological action or activity,[7] such as by chemical properties, mode or route of administration, biological system affected, or therapeutic effects. An elaborate and widely used classification system is the Anatomical Therapeutic Chemical Classification System (ATC system). The World Health Organization keeps a list of essential medicines.

A sampling of classes of medicine includes:
1. Antipyretics: reducing fever (pyrexia/pyresis)

Antipyretics are substances that reduce fever.[1] Antipyretics cause the hypothalamus to override a prostaglandin-induced increase in temperature. The body then works to lower the temperature, which results in a reduction in fever.
2. Analgesics: reducing pain (painkillers)

An **analgesic** or **painkiller** is any member of the group of drugs used to achieve analgesia, relief from pain.

Analgesic drugs act in various ways on the peripheral and central nervous systems. They are distinct from anesthetics, which temporarily affect, and in some instances completely eliminate, sensation. Analgesics include paracetamol (known in North America as acetaminophen or simply APAP), the nonsteroidal anti-inflammatory drugs (NSAIDs) such as the salicylates, and opioid drugs such as morphine and oxycodone.

When choosing analgesics, the severity and response to other medication determines the choice of agent; the World Health Organization (WHO) pain ladder[1] specifies mild analgesics as its first step.

Analgesic choice is also determined by the type of pain: For neuropathic pain, traditional analgesics are less effective, and there is often benefit from classes of drugs that are not normally considered analgesics, such as tricyclic antidepressants and anticonvulsants.[2]

3. Antimalarial drugs: treating malaria

Antimalarial medications, also known as **antimalarials**, are designed to prevent or cure malaria. Such drugs may be used for some or all of the following:
- Treatment of malaria in individuals with suspected or confirmed infection
- Prevention of infection in individuals visiting a malaria-endemic region who have no immunity (malaria prophylaxis)
- Routine intermittent treatment of certain groups in endemic regions (intermittent preventive therapy)

4. Antibiotics: inhibiting germ growth

An **antibiotic** is a type of antimicrobial substance active against bacteria and is the most important type of antibacterial agent for fighting bacterial infections. Antibiotic medications are widely used in the treatment and prevention of such infections. They may either kill or inhibit the growth of bacteria. A limited number of antibiotics also possess antiprotozoal activity.Antibiotics are not effective against viruses such as the common cold or influenza; drugs which inhibit viruses are termed antiviral drugs or antivirals rather than antibiotics.

Sometimes, the term *antibiotic* (which means "opposing life", from New Latin based on ancient Greek roots) is broadly used to refer to any substance used against microbes, but in the usual medical usage, antibiotics (such as penicillin) are those produced naturally (by one microorganism fighting another), whereas nonantibiotic antibacterials (such as sulfonamides and antiseptics) are fully synthetic. However, both classes have the same goal of killing or preventing the growth of microorganisms, and both are included in antimicrobial chemotherapy. "Antibacterials" include antiseptic drugs, antibacterial soaps, and chemical disinfectants, whereas antibiotics are an important class of antibacterials used more specifically in medicine and sometimes in livestock feed.

Antibiotics revolutionized medicine in the 20th century. However, their effectiveness and easy access have also led to their overuse, and some bacteria have developed resistance.[] This has led to widespread problems, and the World Health Organization have classified antimicrobial resistance as a "serious threat [that] is no longer a prediction for the future, it is happening right now in every region of the world and has the potential to affect anyone, of any age, in any country".

5. Antiseptics: prevention of germ growth near burns, cuts and wounds

Antiseptics are antimicrobial substances that are applied to living tissue/skin to reduce the possibility of infection, sepsis, or putrefaction. Antiseptics are generally distinguished from *antibiotics* by the latter's ability to be transported through the lymphatic system to destroy bacteria within the body, and from *disinfectants*, which destroy microorganisms found on non-living objects.

Some antiseptics are true *germicides*, capable of destroying microbes (bacteriocidal), while others are bacteriostatic and only prevent or inhibit their growth.

Antibacterials include antiseptics that have the proven ability to act against bacteria. Microbicides which destroy virus particles are called viricides or antivirals. Antifungals, also known as an antimycotics, are pharmaceutical fungicides used to treat and prevent mycosis (fungal infection).

6. Mood stabilizers: lithium and valpromide

A **mood stabilizer** is a psychiatric pharmaceutical drug used to treat mood disorders characterized by intense and sustained mood shifts, typically bipolar disorder type I or type II, borderline personality disorder (BPD) and schizoaffective disorder.

7. Hormone replacements: Premarin

Hormone replacement therapy (**HRT**), also known as **menopausal hormone therapy** (**MHT**) or **postmenopausal hormone therapy** (**PHT**, **PMHT**), is a form of hormone therapy which is used to treat symptoms associated with menopause in women.These symptoms can include hot flashes, vaginal atrophy and dryness, and bone loss, among others, and are caused by diminished levels of sex hormones in the menopausal period. The main hormonal medications used in HRT for menopausal symptoms are estrogens and progestogens.A progestogen is usually used in combination with an estrogen in women with intact uteruses because unopposed estrogen therapy is associated with endometrial hyperplasia and cancer and progestogens prevent these risks. Androgens, like testosterone, are sometimes used in HRT as well.HRT medications are available in various forms and for use by a variety of different routes of administration.

The 2002 Women's Health Initiative (WHI) of the National Institutes of Health (NIH) found disparate results for all cause mortality with HRT, finding it to be lower when HRT was begun earlier, between age 50 to 59, but higher when begun after age 60. In older patients, there was an increased incidence of breast cancer, heart attacks and stroke, although a reduced incidence of colorectal cancer and bone fracture.Some of the WHI findings were again found in a larger national study done in the United Kingdom, known as the Million Women Study (MWS). As a result of these findings, the number of women taking HRT dropped precipitously.The WHI recommended that women with non-surgical menopause take the lowest feasible dose of HRT for the shortest possible time to minimize associated risks.

The current indications for use from the United States Food and Drug Administration (FDA) include short-term treatment of menopausal symptoms, such as vasomotor hot flashes or vaginal atrophy, and prevention of osteoporosis. In 2012 and 2017, the United States Preventive Task Force (USPSTF) concluded that the harmful effects of combined estrogen and progestin therapy are likely to exceed the chronic disease prevention benefits in most women. A consensus expert opinion published by The Endocrine Society stated that when taken during perimenopause, or the initial years of menopause, HRT carries significantly fewer risks than previously published, and reduces all cause mortality in most patient scenarios.[13] The American Association of Clinical Endocrinologists (AACE) also released a position statement in 2009 that approved of HRT in appropriate clinical scenarios.

8. Oral contraceptives: Enovid, "biphasic" pill, and "triphasic" pill

Oral contraceptives, abbreviated **OCPs**, also known as **birth control pills**, are medications taken by mouth for the purpose of birth control.

9. Stimulants: methylphenidate, amphetamine

Stimulants (also often referred to as **psychostimulants** or colloquially as **uppers**) is an overarching term that covers many drugs including those that increase activity of the central nervous system and the body drugs that are pleasurable and invigorating, or drugs that have sympathomimetic effects.Stimulants are widely used throughout the world as prescription medicines as well as without a prescription (either legally or illicitly) as performance-enhancing or recreational drugs. The most frequently prescribed stimulants as of 2013 were lisdexamfetamine, methylphenidate, and amphetamine.It is estimated that the percentage of the

population that has abused amphetamine-type stimulants (e.g., amphetamine, methamphetamine, MDMA, etc.) and cocaine combined is between 0.8% and 2.1%.

10. Tranquilizers: meprobamate, chlorpromazine, reserpine, chlordiazepoxide, diazepam, and alprazolam

A **tranquilizer** refers to a drug which is designed for the treatment of anxiety, fear, tension, agitation, and disturbances of the mind,specifically to reduce states of anxiety and tension Tranquilizer, as a term, was brought into existence by F.F. Yonkman (1953),from the conclusions of investigative studies using the drug Reserpine, showed the drug had a calming effect on all animals it was administered to. Reserpine, is a *Centrally Acting Rauwolfia Alkaloid*.The word directly refers to the state of tranquility in a person and other animals.

The term is thought to belong to a lexicon of words thought *popular* or so-called *common*, and so is therefore accordingly thought as not generally in use within the field of medicine, specifically in reference to the group of medications known as anti-psychotic or neuroleptics.

The term is generally used as a synonym for sedative. When used by healthcare professionals, it is usually qualified or replaced with more precise terms:

11. minor tranquilizer usually refers to anxiolytics.
12. major tranquilizer might refer to antipsychotics.

Mood stabilizers might also be considered to belong to the classification of tranquilizing agents.[

13. Statins: lovastatin, pravastatin, and simvastatin

Statins, also known as **HMG-CoA reductase inhibitors**, are a class of lipid-lowering medications. Statins have been found to reduce cardiovascular disease and mortality in those who are at high risk of cardiovascular disease. The evidence is strong that statins are effective for treating cardiovascular disease in the early stages of the disease (secondary prevention) and in those at elevated risk but without cardiovascular disease (primary prevention).Side effects of statins include muscle pain, increased risk of diabetes mellitus, and abnormalities in liver enzyme tests. Additionally, they have rare but severe adverse effects, particularly muscle damage.They inhibit the enzyme HMG-CoA reductase which plays a central role in the production of cholesterol. High cholesterol levels have been associated with cardiovascular disease.

System Description

What is My pharmacy

If you're finding difficulty in going to the pharmacy ,finding a specific pharmaceutical drug or any healthcare product in general , now you can check whether what you are looking for is available in the pharmacy or not . Customers can now search and find what they are looking for by simply visiting our website where you can also know further information .

The system here offers the owner of the pharmacy to keep his products updated online , whenever some product is missing it gets updated on the system. He can check up on the drugs available with their expiration dates and active ingredients .If a special product has been highly demanded on the market it gets posted on the home page of the website. He can control and check the doctor's daily shifts. He can update the delivery service location coverage if he wants an expansion.

The customer here benefits from some features the system offers . The system facilitates the process of finding a product needed by the customer by searching online whether it's available or not   , knowing further details about the product ,let's take medicine for example , the customer can see the drug prescription and active ingredients if he's looking for something specific . Online shipping is done by just clicking a button and adding some information to get the products in the basket delivered to him , the customer also can choose the payment method ,whether he wants to pay in cash or by using a credit card , if it's a credit card then some more information is needed.

System Architecture

My pharmacy system introduces great medical help and service.
The system offer the contents and service to both mobile and desktop users via web-based or dedicated mobile software.

The system consists of following modules:

(1) Storage, (2) Data Processing, (3) Data Analytics, (4) Indexing, (5) staffArea (6) General User Area, (7) Supervisors Area, (8) System Administration Area, (9) Security, (10) Reporting, (11) Cloud Service, (12) customer Mobile Application.

Storage

Data processing	Data analytics	Indexing	Security

Staff area	General user area	Supervisor area

Admin area	Reporting area

Storage

My pharmacy uses different types of storage:
- Core storage for pharmaceutical material and user interaction
- Archive storage for historical changes, deleted contents and old logs
- System storage for system configuration, users information and fresh logs
- Indexing storage to support full text search engines
- Analytics storage(s) to store the outcomes of data analytics module

Core storage uses MySQL database installed over distributed infrastructure.It will allow flexible data definition and allow future extension of the data and contents of the page.

Archive storage uses JSON data format stored directly over distributed storage. JSON allow flexible access of data attributes. Distributed storage allow fast access of data items and offer expandable storage. Data replication is configured to minimum which full data availability and data recovery needs of archiving information.

System storage uses traditional structured database which provide better queries and data processing over structured contents.

Data Processing

Data processing module is responsible on providing all data related services like data modeling and correction, data transformation, data classifier and multimedia processing.

Data modeling and correction is required to understand the textual material based on the related language model, this will allow better revision and improve the quality of examination material.

Data transformation is required to allow import and export of different data format. The system supports common data formats supported by common data processors applications.

Multimedia processing is required to enhance the quality of multimedia contents like images, audio and video. It converts multimedia contents to unified format. Also, this service is required to detect some features required by data classifier service.

Data classifier is required to classify the contents which is important to avoid non-appropriate material.

The classifier uses information retrieved by data modeling and image and video processing services.

Data Analytics

My pharmacy holds huge amount of contents which includes pharmaceutical products, user interaction and logs. This modules is important to study the contents and produce very useful result. Basically this module support following data analytics.

Quality analysis to study the correctness of the contents based on user interaction.

Statistical analysis to produce a set of statistical studies regarding contents and users interaction. For example, this analysis can study the purchases and searches.

Indexing

This module is responsible on indexing textual contents to allow internal full text search queries. Full text search is used by final users to find certain contents. Also, it used by other modules like data processing to locate contents in a fixed time regardless the overall contents size.

Supervisors Area

This module is dedicated for system operators. System operators are responsible on managing the system operation and contents. System operators, can access all system contents, view statistical reports, and provide direct support to users.

Administration Area

This module is dedicated for system administrators. System administrators responsible on system management, configuration, backup and solving technical issues. System administrator, can view system status, data status,logs and other system status and measures.

Reporting

This module is responsible on providing many business and technical reports like following:
- Technical reports:
  - Resources usage, it shows the usage of storage, CPU and bandwidth.
  - Users, contents and logs statistics.
  - Administrators and operators activities statistics.
- Business reports:
  - Available pharmaceutical products.
  - Statistical report on user searches and purchases.
  - Contents quality report published contents vs. available contents.
  - well studied news program to update the customer.

System Features

Online Profile

Visitors will have now the access to create their own profile that will hold a lot information about them.
This information will ease them later the process of choosing the drugs, as they will have their history saved too.

Drug Inventory

Customer will be able to access to a large collection of drugs that is listed in our database.

Drugs interaction

A lot of times people buy drugs that interact negatively when they are consumed together, now customer can shop safely not caring about these chemical interactions, as we will alert him when he updates his cart.

User Review

Now user after registering will be able to write his review about a specific drug that he used and giving details about his symptoms to help others selecting the perfect drug for them.

User rating system

There will be a user rating system that depends on his level of activity on the site, a high rating means that the user is reliable and low rating means that the user is not reliable.

Wikipedia Integration

A link for the active ingredient of each drug will be there, so user will be able to read more about it.

Order Process Security

Some people will try to register into the website through a fake account, giving a false shipping address and mobile phone. The system is protected against this mistake by applying following protection mechanisms:

- Only authenticated users can login to the system to malicious users.

- User account must be verified by email or mobile phone.

- Additional verification records may require by whom who wants to register as a Doctor like doctor's syndicate id or other.

- The system stops or blocks web crawlers from editing the inventory

Our Doctors prescription

Now users can now communicate with our doctors through writing a text with there symptoms or even uploading an old drug prescription that they don't understand or need a replacement for some of the drugs, even better they can add their x-rays and other so our doctor can examine it (this feature for high rated user as a gift – once a month).

System Development and Operation

Overview

The system development is performed using Agile methodology. Initial R&D activity should be applied to experiments tools and techniques. Later continuous R&D activity will run beside the system development activities. The first version of the system should take 13 weeks. After release, the system will enter an initial operation phase for six months. During that phase the whole development team will communicate directly with the operation and business team. Later the system will enter the final operation and maintenance phase. During that phase a minor development team will provide an indirect technical support.

Development Plan

	1	2	3	4	5	6	7	8	9	10	11	12	13
Study Requirements	■	■											
Management Planning	■	■											
Preparation	■	■											
Test Planning			■	■	■								
Implementation			■	■	■	■	■	■	■	■			
Research			■	■	■	■	■	■	■	■			
Testing			■	■	■	■	■	■	■	■			
System Testing											■	■	■
Final Release													■

Team

Team	Role		Names	#
Management Team	Project Manager		Andrew Atef Fathy	1
Development Team	Web Developers	Team leader	Mostafa Ibrahim Moustafa	1
		Front-End developers	Mohammed Ashraf Youssef Mohammed Ahmed Ibrahim Mahmoud Yasser Mohammed Mohammed Ahmed Abdelhamed	4
		Back-End developers	Andrew Atef Fathy Mostafa Ibrahim Moustafa Mazen Refaat Ali Mohammed Mostafa Yaman Mahmoud Mohammed Kholief Marwan Atef Mohammed	6

Tools

Operation	Tools
Source Control and Versioning	GitHub/Git
Tasks and Issues Tracking	GitHub
Structured Database	MySQL
Programming Languages	html,css,php,ajax ,javascript
Documents	Google Docs
Planning	Google Docs and whatsapp

Assumptions

·   The system completely depends on pharmacist and developer.

·   Pharmacist divides drugs into different subdivisions:

1. According to active ingredients, explaining negatively drug iteractions and developer works on displaying warnings if patient ordered drugs unfit with each other.
2. According to age, developer requests patients age and inform him if the drug is improper with his age.

·   Developer divide the products into drugs and cosmetics to make uage easier.

·   The system does not provide any diagnosis for patients, it may only contains links to other systems like MAYO CLINIC.

Risks

•   Cost is more than it's expected.
•   Project schedule is overriding the deadline
•   Facing many obstacles in some features may lead to be uncompleted.

References

- Wikipedia.org