

GROUP NAME
“Security_Mind”

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Project Title

Unauthorized Software Detection

Introduction

For many years, it's been believed that one of the biggest threats to the security of most networks is the end user's workstation. When a user is going to try to install unauthorized software, copy sensitive data onto removable media, or perform some other action to try to circumvent network's security.

In a laboratory environment, it is crucial to maintain a secure and controlled system for running experiments and analyzing data. Malicious code may compromise machines if either the devices are exposed to outside or unexposed inner devices are updated unauthentically. As such, detecting and removing unauthorized software is a critical task for lab administrators

Unauthorized Software means software which is not licensed for use, or software the use of which has not been authorized by the head of an organisation. Unauthorized software increases the risk of outsiders gaining access to sensitive data. Any software that is not authorized is likely managed without proper patching, updates, configurations, and security protocols. Without the knowledge of agency software, IT managers cannot fully protect their data and information.

Tools Used:

- Python
- Google Sheet
- Google API
- Tkinter

Working Procedure:

For this project, we are choosing SDLC **Waterfall Model**.

SDLC has different models designed which have their advantages and disadvantages. Waterfall model is a traditional SDLC model.

- The Waterfall Model was the first Process Model to be introduced.
- It is a straightforward and basic structure which can be easily understandable by software developers and testers.
- It is very simple to understand and use.
- In a waterfall model, each phase must be completed before the next phase can begin and there is no overlapping in the phases.
- The waterfall Model illustrates the software development process in a linear sequential flow. This means that any phase in the development process begins only if the previous phase is complete. In this waterfall model, the phases do not overlap.

Waterfall Model – Design

Waterfall approach was first SDLC Model to be used widely in Software Engineering to ensure success of the project. In "The Waterfall" approach, the whole process of software development is divided into separate phases. In this Waterfall model, typically, the outcome of one phase acts as the input for the next phase sequentially.

The following illustration is a representation of the different phases of the Waterfall Model.

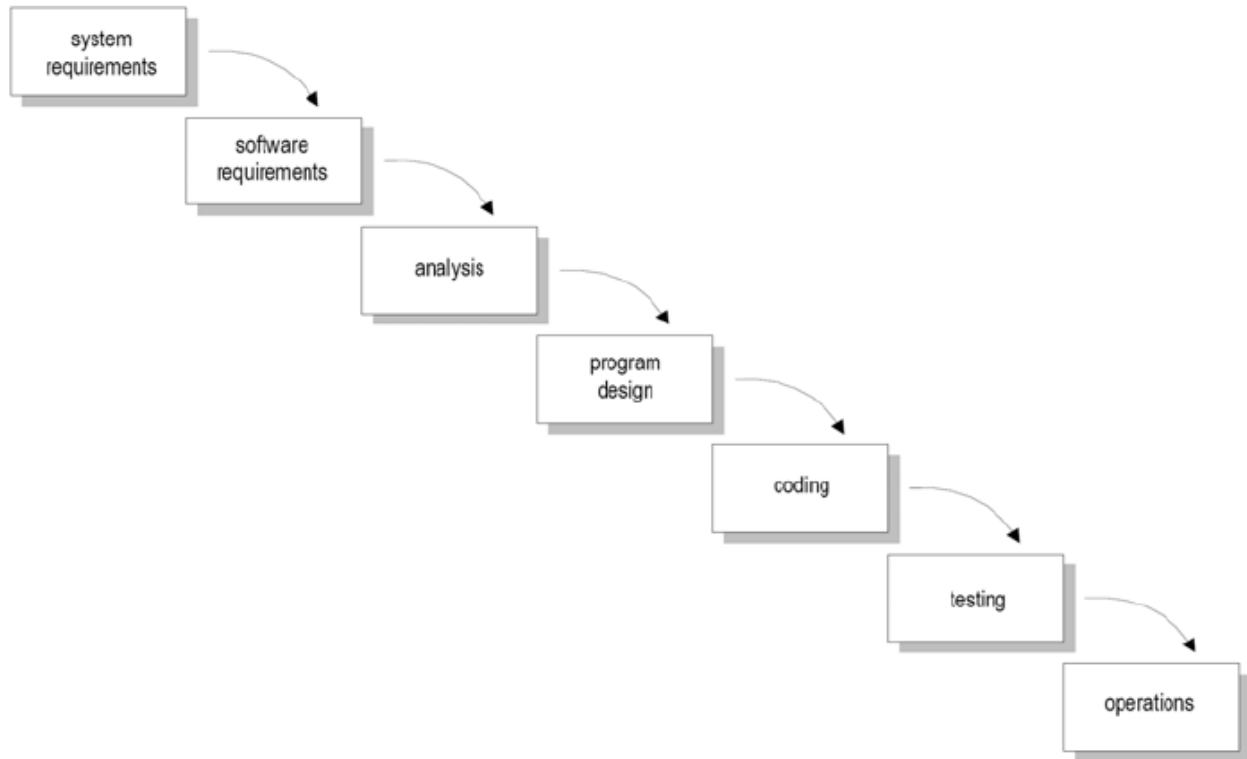


Fig:Waterfall Model

System Requirements:

To be used efficiently, all computer software needs certain hardware components or other software resources to be present on a computer. These prerequisites are known as (computer) **system requirements** and are often used as a guideline as opposed to an absolute rule. Most software defines two sets of system requirements: minimum and recommended. A second meaning of the term of system requirements, is a generalization of this first definition, giving the requirements to be met in the design of a system or sub-system.

In our project, our requirement is to detect unauthorized software from system.

Software Requirements:

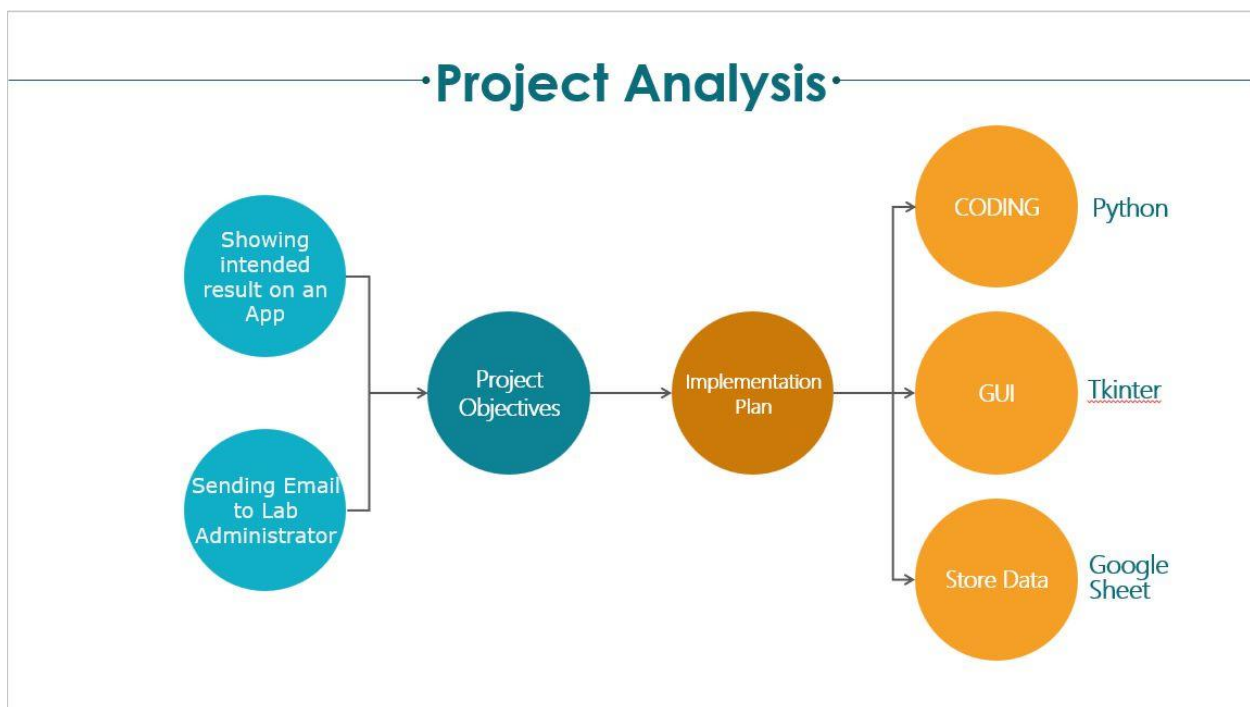
Software requirements for a system are the description of what the system should do, the service or services that it provides and the constraints on its operation. All possible requirements of the system to be developed are captured in this phase and documented in a requirement specification document. The purpose of software requirements is to establish whether it would be monetarily as well as technically practicable to expand the development of software. This has the achievability study with the understanding of the problem as well as determines the diverse potential strategies used for solving the problem.

In our project, our requirements are-

- **Python**
It's stable, flexible, and gives developers access to a variety of tools that make their jobs easier.
- **Google Sheet**
Google Sheets offers multiple features for project management, such as: Basic templates for a project timeline, plans, trackers, etc.
- **Google API**
APIs are an invaluable tool for developers. They enable us to focus on unique application logic, instead of having to hack together plumbing from scratch.
- **Tkinter**
Tkinter can easily be called the de facto standard GUI of Python. Apart from being an open-source GUI library, it is popular for its sheer simplicity and interactive graphical user interface.

Analysis:

In systems engineering and software engineering, **Requirements Analysis** focuses on the tasks that determine the needs or conditions to meet the new or altered product or project, taking account of the possibly conflicting requirements of the various stakeholders, analyzing, documenting, validating and managing software or system requirements. Requirements analysis is critical to the success or failure of a systems or software project. The requirements should be documented, actionable, measurable, testable, traceable, related to identified business needs or opportunities, and defined to a level of detail sufficient for system design.



Program Design:

Software design is the process by which an agent creates a specification of a software artifact intended to accomplish goals, using a set of primitive components and subject to constraints. Software design may refer to either "all the activity involved in conceptualizing, framing, implementing, commissioning, and ultimately modifying complex systems" or "the activity following requirements specification and before programming, as a stylized software engineering process."

Software design usually involves problem-solving and planning a software solution. This includes both a low-level component and algorithm design and a high-level, architecture design.

In our project, we are gathering data of installed software of each PC in Google Sheet.

- **At first, we are giving the required software list that can be installed.**
- **Then matching it with the installed software in each PC.**
- **Then we get the unauthorized software which are installed without permission by the head.**
- **Then we are sending the list of the threatened software through E-mail.**
- **And finally, we are displaying the list using Tkinter.**

Coding:

Computer coding is the process of performing a particular computation usually by designing and building an executable computer program. Coding involves tasks such as analysis, generating algorithms, profiling algorithms' accuracy and resource consumption, and the

implementation of algorithms. The source code of a program is written in one or more languages that are intelligible to programmers, rather than machine code, which is directly executed by the CPU. The purpose of programming is to find a sequence of instructions that will automate the performance of a task on a computer, often for solving a given problem.

- **Python**

Using python and Windows Reg Query, we fetched the list of the software of our system.

- **Google Sheet**

Fetches Default Software from Google sheet. Matching software list with Generated list. Upload non-matched softwares.

- **E-mail**

Using the python smtplib library function, sent e-mail to the LAB Administrator.

- **Tkinter**

User interface of the app designed using Python Library Function and fetching data from Google Sheets.

Testing:

Software testing is the act of examining the artifacts and the behavior of the software under test by validation and verification. Software testing can also provide an objective, independent view of the software to allow the business to appreciate and understand the risks of software implementation

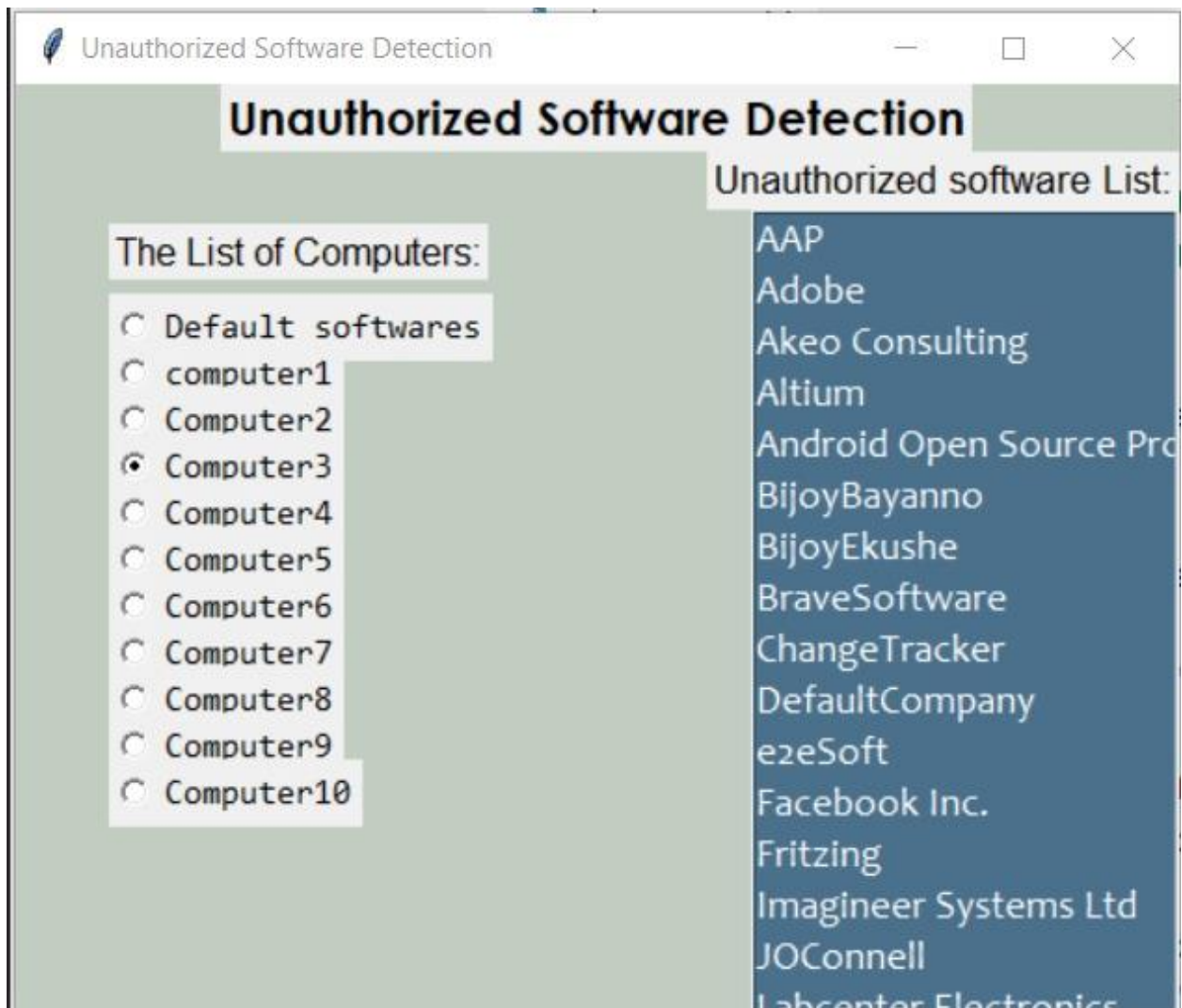
Software testing can provide objective, independent information about the quality of software and risk of its failure to users or sponsors.

We tested Several PCs for checking the threatened applications

Operations:

A **computer operator** is a role in IT which oversees the running of computer systems, ensuring that the machines, and computers are running properly. The job of a computer operator as defined is to "monitor and control ... and respond to ... enter commands ... set controls on computer and peripheral devices. This Excludes Data Entry."

Graphical User Interface –



Frontend:



Fig: Tkinter

Backend:



Fig: Python



Fig: Google Sheets



Fig: Google APIs

Advantages of this project:

- Easily detect unauthorized software.
- Easy to Install
- Easy to run
- Because of GUI (Graphical User Interface), became user friendly.
- Free of cost
- Saves Time