

Summer Fellowship Report

On

Development of Windows Installer, Ubuntu Installer and Update Feature

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Contents

1	Introduction								
	1.1	Osdag Internship	3						
	1.2	What is Osdag?	4						
	1.3	Who can use ? \ldots \ldots \ldots \ldots \ldots	5						
2	Dev	velopment work on Windows Installer	7						
	2.1	Setup Environment	8						
	2.2	Download Required Files	9						
	2.3	Create Workspace Folder	10						
	2.4	Creating Nsis Script	11						
3	Development work on Ubuntu Installer								
	3.1	Download Required Files	13						
	3.2	Create Workspace folder	13						
	3.3	Creating Installer	14						
4	Development work on Minimal installer and								
	Upo	date Notification	15						
	4.1	Minimal Installer	15						
	4.2	Check For Update	15						
5	Cor	nclusion	17						

Introduction

1.1 Osdag Internship

Osdag internship is provided under the FOSSEE project. FOSSEE project promotes the use of FOSS (Free/Libre and Open Source Software) tools to improve quality of education in our country. FOSSEE encourages the use of FOSS tools through various activities to ensure availability of competent free software equivalent to commercial (paid) softwares.

The FOSSEE project is a part of the National Mission on Education through Infrastructure and Communication Technology(ICT), Ministry of Human Resources and Development, Government of India.

Osdag is one such open source software which comes under the FOSSEE project. Osdag internship is provided through FOSSEE project. Any UG/PG/PhD holder can apply for this internship. And the selection will be based on a screening task.



1.2 What is Osdag?

Osdag is Free/Libre and Open Source Software being developed for design of steel structures. Its source code is written in Python, 3D CAD images are developed using PythonOCC. Github is used to ensure smooth workflow between different modules and team members. It is in a path where people from around the world would be able to contribute to its development. FOSSEE's "Share alike" policy would improve the standard of the software when the source code is further modified based on the industrial and educational needs across the country.

Design and Detailing Checklist (DDCL) for different connections, members and structure designs is one of the important bi-products of this project. It would create a repository and design guide book for steel construction based on Indian Standard codes and best industry practices.

Osdag provides various features such as:

- An interactive window displaying a 3D CAD model, which provides a clear visualisation of the designed component.
- Creation of 3D CAD models that can be imported to generic CAD softwares.



• User-friendly input and output docs, with text-validated fields grouped according to the design flow.



• A text window for message display, that also suggests necessary changes if a trial design is found unsafe.



• Creation of a professional design report showing all necessary checks, design calculations as per IS 800:2007, and standard views of the designed component.



1.3 Who can use ?

Osdag is created both for educational purpose and industry professionals. As Osdag is currently funded by MHRD, Osdag team is developing software in such a way that it can be used by the students during their academics and to give them a better insight look in the subject.

Osdag can be used by anyone starting from novice to professionals. It's simple user interface makes it flexible and attractive than other software. Video tutorials are available to help get started. The video tutorials of Osdag can be accessed here.

Development work on Windows Installer

Windows Installer (previously known as Microsoft Installer, codename Darwin) is a software component and application programming interface (API) of Microsoft Windows used for the installation, maintenance, and removal of software. The installation information, and optionally the files themselves, are packaged in installation packages, loosely relational databases structured as COM Structured Storages and commonly known as "MSI files", from their default filename extensions. The packages with the file extensions mst contain Windows Installer "Transformation Scripts", those with the msm extensions contain "Merge Modules" and the file extension pcp is used for "Patch Creation Properties". Windows Installer contains significant changes from its predecessor, Setup API. New features include a GUI framework and automatic generation of the uninstallation sequence. Windows Installer is positioned as an alternative to stand-alone executable installer frameworks such as older versions of InstallShield and NSIS.



2.1 Setup Enviroment

1. Nsis:Nullsoft Scriptable Install System (NSIS) is a script-driven installer authoring tool for Microsoft Windows backed by Nullsoft, the creators of Winamp. NSIS is released under a combination of free software licenses, primarily the zlib license.[2] It has become a widely used alternative to commercial proprietary products like InstallShield, with users including Amazon.com, Dropbox, Google, Ubisoft, FL Studio, BitTorrent, and McAfee.

Download Nsis

2. NotePad++(For writing script):Notepad++ is a text and source code editor for use with Microsoft Windows. It supports tabbed editing, which allows working with multiple open files in a single window. The project's name comes from the C increment operator. Notepad++ is distributed as free software. At first the project was hosted on SourceForge.net, from where it has been downloaded over 28 million times, and twice won the SourceForge Community Choice Award for Best Developer Tool.The project was hosted on Tux-Family from 2010 to 2015; since 2015 Notepad++ has been hosted on GitHub.Notepad++ uses the Scintilla

editor component. Download NotePad++

3. **Required Header files:**Download the header files from the link give below and move these files to include folder inside Nsis installed Directory. Header files

2.2 Download Required Files

- 1. Miniconda:Miniconda is a free minimal installer for conda. It is a small, bootstrap version of Anaconda that includes only conda, Python, the packages they depend on, and a small number of other useful packages, including pip, zlib and a few others. Use the conda install command to install 720+ additional conda packages from the Anaconda repository. Download Here
- 2. Miktex:MiKTeX is a free distribution of the TeX/LaTeX typesetting system for Microsoft Windows (and for Mac and certain Linux distributions such as Ubuntu, Debian and Fedora). It also contains a set of related programs. MiKTeX provides the tools necessary to prepare documents using the TeX/LaTeX markup language, as well as a simple TeX editor: TeXworks. The name comes from Christian Schenk's login: MiK for Micro-Kid.

Download Here

- 3. **Python Dependencies:**Download all required dependencies from:-
 - Anaconda Cloud
 - Anaconda Repo



- 4. Latex Dependencies:Download all required Latex dependencies and compile it.
 - Comprehensive TEX Archive Network

2.3 Create Workspace Folder

- Move Miniconda, logo, lisence and welcomepage files into Files folder.
- Move all downloaded python dependencies into dependencies folder and create batch script to install these dependencies.
 Batch file
- copy the compile latex package and miktex into latex folder.
- Create python script for checking miktex installation and coping packages folder. Python Files
- Make exe using pyinstaller and move into latex folder.

• Copy the Osdag folder into the files.

2.4 Creating Nsis Script

- Using notepad++ create a .nsis file and write the required codes.
- For writing codes take help from Nsis Docs and example given in Nsis install dir.



• After writing the codes compile it using nsis compiler. Nsis Script



• After compiling we will get the desire .exe file in work space folder.

Development work on Ubuntu Installer

As Osdag is a Free and Open Source Software it is necessary to have it available for the linux platform. On our mission to promote FOSS among the general people it is a good idea to create an application for Ubuntu Linux as it is one of the most used linux distribution. Another important reason to develop an application for Ubuntu is Great and Supportive Community - The Ubuntu Community is a community that welcomes new Ubuntu users and developers. They know that sharing apps with them requires hard work, passion and dedication so they are there to support you. We dont need marketing to promote our apps, the community will do it for us. If the app is special to Ubuntu users and helps them to complete their tasks they will give love back to us by reviewing your app and rating it on the Ubuntu Software Center. We already had Linux installer with bash scripts, it just needed to be updated (updating package versions and adding the newer ones).



Ubuntu Installer Workflow

3.1 Download Required Files

- 1. MiniConda:Donload Miniconda
- 2. **Python Dependencies:**Download all required dependencies from:-
 - Anaconda Cloud
 - Anaconda Repo

3.2 Create Workspace folder



• Move minconda to workspace folder.

- Copy the Osadg into workspace.
- Move all downloaded dependencies to dependencies folder.

3.3 Creating Installer

- Created a shell script for installing dependencies. Dependencies Script
- Created a shell script for installing texlive. Texlive Script



• Compress the workspace folder.

Development work on Minimal installer and Update Notification

4.1 Minimal Installer

Minimal installer is just for give update when we have new Osdag Feature.

- Create to folder and copy the new Osadg into that folder.
- Created a python for checking and copy the new osdag to previous location.
 Python script

4.2 Check For Update



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Update script

Conclusion

On the whole, this internship was a useful experience. I have gained new knowledge, skills and met many new people. I achieved several learning goals, and have moved a step further in achieving other. I got insight into professional practice. Internship has proved to be satisfactory and it has allowed as an opportunity to get an exposure of the practical implementation of theoretical fundamentals. **Here** during the internship period I developed myskills in following softwares/tools :

- 1. Osdag
- 2. More On Python
- 3. Latex
- 4. Git and Github
- 5. Nsis Scripting
- 6. Shell Scripting
- 7. Batch Scripting
- 8. More on Ubuntu
- 9. Tools For Communication

Throughout the internship, I found that several things are important:

- Critical and Analytical Thinking: To organize our tasks and assignment, we need to analyse our problems and assignment, and to formulate a good solution to the problem. We would have to set contingency plan for the solution, so that we are well prepared for the unforeseeable situations.
- Time Management: As overall project staff and programmer are always racing against tight time line and packed schedule, a proper time management will minimize facing overdue deadlines. An effective time management allows us to do our assignment efficiently and meet our schedules. Scheduling avoids time wastage and allows us to plan ahead, and gaining more as a result.
- Goal Management: It is better to sub-divide the goals to a few achievable tasks, so that we will be gaining more confidence by accomplishing those tasks.
- Colleague Interactions: In working environment, teamwork plays a vital role in contributing to a strong organization. Teamwork is also essential in reaching the goals of the organization as an entity. Thus, communicating and sharing is much needed in the working environment. Therefore, we should be respecting each other in work, and working together as a team, instead of working alone. This is because working together as a team is easier in reaching our targets, rather than operating individually.
- Tools for communication: Most of the open-source community uses the following tools for communicat-

ing, asking questions and announcements etc. While seeking solutions to some of the problems I learned to use these tools.

- Mailing-list A mailing list is a collection of names and addresses used by an individual or an organization to send material to multiple recipients. The term is often extended to include the people subscribed to such a list, so the group of subscribers is referred to as "the mailing list", or simply "the list". Mailing lists preceded web forums and can provide similar functionalities. I learned the difference between top-posting and bottom posting, and why the latter is preferred in the open-source community.
- Forums An Internet forum, or message board, is an online discussion site where people can hold conversations in the form of posted messages. They differ from chat 22 rooms in that messages are often longer than one line of text, and are at least temporarily archived. I used to ask ubuntu, Launchpad forum, Unix stack exchange, learned about asking questions, providing detailed response etc. I would like to once again appreciate everyone who has made my internship training a superb experience.