

**Computer Science**  
**Project Synopsis**  
**(Term – 1 2021 – 22)**  
**Python & MySQL**

# ACKNOWLEDGMENT

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# **INTRODUCTION**

In this era of COVID-19 each of us had to face a lot of difficulties in adapting to this virtual world of reality. Especially students had a real hard time in adapting to this new online education mode instead of the following one. As we all are students too, we decided to take an initiative by making a students' toolkit for easing their work stress.

# **OVERVIEW**

Our students' toolkit consist of a scientific calculator which includes all functions and operations a student needs till class 12. Then we have a module consisting 3 games for relaxing and a hyperlink module to divert students' mind from stress. It consists of usage of various python's inbuilt modules like math, random, time, tkinter, matplotlib, pygame, etc.

# Python

[Python](#) is an interpreted, object-oriented, high-level, open-source programming language with dynamic semantics. Its high-level built in data structures, combined with dynamic typing and dynamic binding; making it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together. Python's simple, easy to learn syntax emphasizes readability and therefore reduces the cost of program maintenance. Python supports modules and packages, which encourages program modularity and code reuse. The Python interpreter and the extensive standard library are available in source or binary form without charge for all 20 major platforms, including Windows, Linux, Mac, etc. It has a higher productivity rate. Debugging Python programs is easy: a bug or bad input will never cause a segmentation fault. A source level debugger written in Python itself, testifying to Python's introspective power, allows inspection of local and global variables, evaluation of arbitrary expressions, setting breakpoints, stepping through the code a line at a time, and so on. On the other hand, often the quickest way to debug a program is to add a few print statements to the source: the fast edit-test-debug cycle makes this simple approach very effective.

# MySQL

[MySQL](#) is a relational DBMS that can run virtually on all platforms, including Linux, Unix and Windows. Popular for web-based applications and online publishing, MySQL is a part of open-source enterprise stack LAMP (Linux, Apache, MySQL, PHP). MySQL is a freely available open source RDBMS that uses Structured Query Language (SQL). MySQL is fast, reliable, scalable alternative to many of the commercial RDBMS available today. MySQL provides a rich set of features that support a secure environment for storing, maintaining, and accessing data.

MySQL was created and supported by MySQL AB, a company based in Sweden. This company is now a subsidiary of Sun Microsystems, which holds the copyright to most of the codebase. On April 20th, 2009 Oracle Corp., which develops and sells the proprietary Oracle database, announced a deal to acquire Sun Microsystems.

SQL provides many different types of commands used for different purposes. These can be divided into following categories:

- i. Data Definition Language (DDL)
- ii. Data Manipulation Language (DML)
- iii. Transaction Control Language (TCL)

# Tkinter

Python has a lot of [GUI Programming](#) but Tkinter is the only framework that's built into the Python standard library. Tkinter has several strengths. It's cross-platform, so the same code works on Windows, Mac, and Linux. Visual elements are rendered using native operating system elements, so applications built with Tkinter look like they belong on the platform where they're run.

Although Tkinter is considered the de-facto Python GUI framework, it's not without criticism. One notable criticism is that GUIs built with Tkinter look outdated. If you want a shiny, modern interface, then Tkinter may not be what you're looking for.

However, Tkinter is lightweight and relatively painless to use compared to other frameworks. This makes it a compelling choice for building GUI applications in Python, especially for applications where a modern sheen is unnecessary, and the top priority is to build something that's functional and cross-platform quickly.

# Matplotlib

Matplotlib is a low level graph plotting library in python that serves as a visualization utility. Matplotlib is one of the most popular Python packages used for data visualization. It is a cross-platform library for making 2D plots from data in arrays. It provides an object-oriented API that helps in embedding plots in applications using Python GUI toolkits such as Tkinter. It can be used in Python and Jupyter notebook and web application servers also. Matplotlib is open source and we can use it freely.



# TURTLE

Turtle is a preinstalled library in Python that is similar to the virtual canvas that we can draw pictures and attractive shapes. It provides the on-screen pen that we can use for drawing. The turtle Library is primarily designed to introduce children to the world of programming. With the help of Turtle's library, new programmers can get an idea of how we can do programming with Python in a fun and interactive way.

It is beneficial to the children and for the experienced programmer because it allows designing unique shapes, attractive pictures, and various games. We can also design the mini games and animation.