	Faculty of Engineering and Technology
JGi JAIN DEEMED-TO-BE UNIVERSITY	**Global Campus** Jakkasandra Post, Kanakapura Taluk, Ramanagara District Pin Code: 562 112

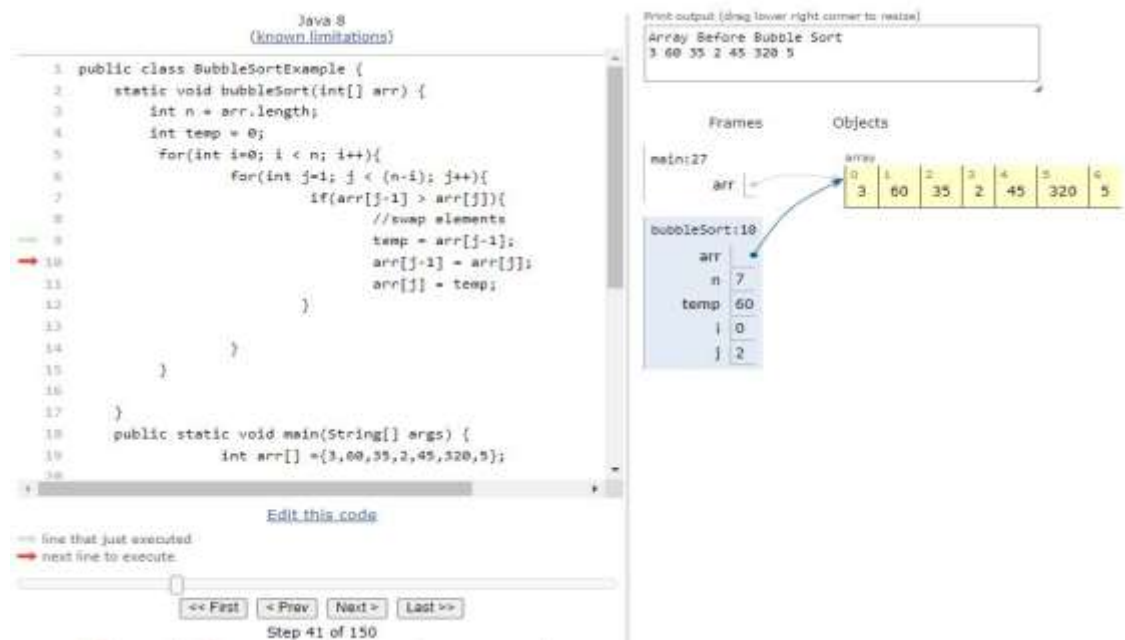**Department of Computer Science & Engineering**

INNOVATIVE TEACHING LEARNING

Innovative learning is the process of creating an atmosphere where students learn about new things regularly, question them, and think of new ideas on their own. As Innovative teachers the faculty members of the department of computer science and engineering are instinctive about student challenges such as lack of understanding, loss of focus, low engagement or demotivation. The faculty members strive to find new ways to keep students on task, motivate them to do their best, and encourage them to succeed. Following are the best innovative teaching learning being followed in the department.

1. **Simulator – "**python tutor"

(i) Python Tutor helps people overcome a fundamental barrier to learning programming: understanding what happens as the computer runs each line of code.

(ii) This tool is used for different programming languages like python, C, C++, Ruby, C# and JavaScript.

(iii) We can use this tool to write Python, Java, C, C++, JavaScript, and Ruby code in your web browser and see its execution visualized step by step.

(iv) Example for "bubble sort program".

(v) **Outcomes:**
    1. Students will be able to understand the concepts well with the visual aid.

2. Students will be comfortable in debugging the logical errors.
3. Should be comfortable to use the tool in understanding Data Structures and Algorithms.

2. Tool Used – "Google Colab"

(i)   Colab, or "Colaboratory", allows you to write and execute Python in your browser, with Zero configuration required, Free access to GPUs and Easy sharing.

(ii)   Colab notebooks allow you to combine executable code and rich text in a single document, along with images, HTML, LaTeX and more.

(iii) With Colab you can harness the full power of popular Python libraries to analyze and visualize data.

(iv)   Example for "factorial program using function"

(v)   Outcomes:
1. Students will have an interactive platform for python programming.
2. Students will have a powerful platform for learning and quickly developing machine learning models in Python.

3. Subject Name - Python Programming (18CS0E02)
Tool Used – "Blockly Developer Tool"

(i) Blockly Developer Tools is a web-based developer tool that automates parts of the Blockly configuration process, including creating custom blocks, building your toolbox, and configuring your web Blockly workspace.

(ii) Blockly is pure JavaScript library, 100% client side - No server side dependencies, Compatible with all major browsers like Chrome, Firefox, Safari, Opera, and IE, Highly customizable and extensible.

(iii) The Blockly library adds an editor to your app that represents coding concepts as interlocking blocks. It outputs syntactically correct code in the programming language of your choice.

https://blockly-demo.appspot.com/static/demos/code/index.html
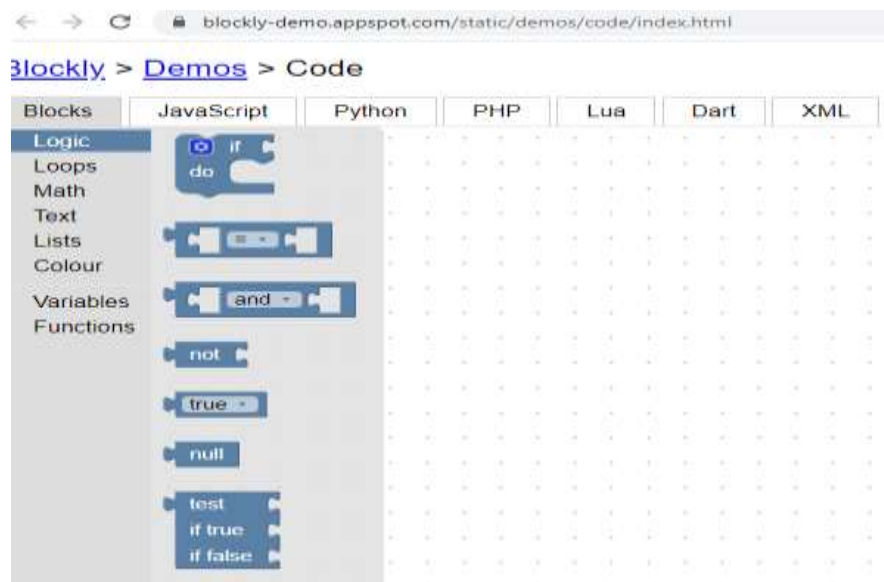
(iv) Outcomes:

1. Students understand the concepts by using them without getting into complexities.
2. Students will also allow code to be migrated into other text-based programming languages easily, thus, making it simpler to export programs.
3. Blockly opens up many new possibilities for education. For example, using Blockly to animate movies with code or learn mathematics for students.

4. **Cooperative Learning** – This is an educational approach, which aims to organize classroom activities into academic and social learning experiences.

5.**Project Based Learning** – Encouraging students to carry out inter departmental projects from initial level and give them hands on experience on real time applications.

6. Delivery of Concepts via Live compilation - using open source IDEs and GitHub Campus Program

7. Learning with hands-on simulations - using CISCO Networking Academy Packet Tracer.

8. Learning Paths are created using Linkedin, NeoLMS, EC-Council and others

9.Partial Delivery– Through Industry Persons the courses is taught based on the need to give the hands on and real time application needs as per industry needs

10.Project Exhibitions – Encourage students to participate in project exhibitions to exchange the knowledge and demonstrate the works carried out in their domains