# DEVELOPMENT OF CODENECT: VISUAL PROGRAMMING SOFTWARE

# FOR LEARNING FUNDAMENTALS OF PROGRAMMING

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Bachelor of Science in Information Technology

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**MAY 2021**

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**LEAVE THIS EMPTY FOR THE MOMENT**

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He obtained his degree in 2021.

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**ABSTRACT**

**LIM-IT, BRANDON B. and PUNAY, JAYKEL O. DEVELOPMENT OF CODENECT: VISUAL PROGRAMMING SOFTWARE FOR LEARNING FUNDAMENTALS OF PROGRAMMING**. Undergraduate Thesis. Bachelor of Science in Information Technology. Cavite State University, Indang, Cavite. May 2021. Adviser: Prof. James Angelo V. Aves

The study was developed during the course of January 2020 to June 2021 and was conducted at Cavite State University – Indang Campus. The study was designed for aiding beginners in the field of programming get a better grasp and understanding about its fundamentals. The study provided solution for helping beginners at programming improve their programming knowledge and understanding by providing an alternative approach to traditional text-based programming through visual programming. The software is composed of seven modules which are the input/output, visual nodes, transpiler, filesystem, simulation, debug, and assessment modules. The data were gathered through conducted survey and assessment using online Google Form from 12 students with programming subjects and courses.

The V-Model was used as methodology for the development of the software which has the following phases: requirements, system design, architecture design, module design, implementation and coding, and testing. The software was developed using the C++ programming language; GLFW and OpenGL as renderers; DearImGui and ImNodes for graphical user interface; TinyC Compiler for compiling and running visual code;

The visual programming software was evaluated using the ISO 9126 standards with the criteria for quality including functionality, reliability, usability, maintainability, efficiency, and portability. The evaluation from both technical and non-technical assessments shows that users are unfamiliar with the concept of visual programming and that it affected the usability of the software. The software passed the criteria for evaluation and met all the requirements and objectives having an overall mean of 4.50 with a descriptive rating of “Excellent” based on the software evaluation participated in by 22 evaluators. Overall, the result and feedback show positive effect in both the interest and usage of the respondents as well as its potential.

The developed visual programming software runs without any need for installation in Linux and Windows platforms. The problems the study solved were visually identified and represented through Ishikawa Diagrams and Context Diagrams. The software was developed also as an alternative approach for learning programming through visual elements and as a preliminary tool before proceeding to higher concepts with traditional text-based programming. The software was evaluated for its quality including functionality, reliability, usability, maintainability, efficiency, portability, and user-friendliness through ISO 9126.

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