# DEVELOPMENT OF CODENECT: VISUAL PROGRAMMING SOFTWARE

# FOR LEARNING FUNDAMENTALS OF PROGRAMMING

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Bachelor of Science in Information Technology

**BRANDON B. LIM-IT**

**JAYKEL O. PUNAY**

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**APPROVAL SHEET DITO**

**LEAVE THIS EMPTY FOR THE MOMENT**

**BIOGRAPHICAL DATA**

**Mr. Brandon Blanker Lim-it** was born on November 02, 1997 in Dasmarinas, Cavite. He is the third child among the four children of Mr. Bobby Sy Lim-it and Mrs. Rosie Blanker Lim-it. He is currently living in Brgy. Manggahan, General Trias, Cavite.

He finished his elementary education at Manggahan Elementary School, General Trias, Cavite in 2010. He obtained his secondary education at Governor Ferrer’s Memorial National High School - Special Science Class, General Trias, Cavite in 2014.

In August 2017, he enrolled at Cavite State University in Indang, Cavite for his college education in the Bachelor of Science in Information Technology program.

He is a Christian and a church worker. He spends his time programming, developing video games, and helping others learn programming through tutoring. His main sport is the game of chess.

He obtained his degree in 2021.

**BIOGRAPHICAL DATA**

**Mr. Jaykel Ortega Punay** was born on the January 11, 1987 in San Francisco, Province of Quezon. He is the second child of Michael and Loida Punay. He currently resides in Pamayanan ng Bagong Kabitenyo (PBK), Phase5, Block 26, Lot 1, Mayaman St., corner Maganda Main St., Pasong Kawayan ll, General Trias City, Cavite.

He earned his primary education at Tadlac Elementary School, Los Banos, Laguna in 2001 and his secondary education at Batong Malake National High School, Los Banos, Laguna in 2005. .

He then transferred to Cavite and work in a company for 10 years before deciding to pursue a college degree. In June 2017, he enrolled at Cavite State University, Indang, Cavite for his college education in the Bachelor of Science in Information Technology program.

He is a car enthusiast and a sporty person, a good husband to Ms. Merry Rosamhea Estomo Punay and a responsible father to his only one child, Elliana Kelisha Estomo Punay. He always looks on the brighter side of each situations. He always moves forward despite of any trials and struggles. He is an optimistic person.

He obtained his degree in 2021.

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**BRANDON B. LIM-IT**

**JAYKEL O. PUNAY**

**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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