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2 Jan 2025

To whom it may concern

Re: Letter of Recommendation for Xavion Mirchandani

It is with great pleasure that I compose this letter of recommendation for Xavion Mirchandani. Since 2021, Xavion has been a dedicated and determined student at Coding Lab, where he has immersed himself in various programming courses, including Python (>100 hours), App development (20 hours) and HTML/CSS/JS (20 hours).

Xavion has delved into a multitude of programming topics. His programming journey began with programming fundamentals such as Data Types, Conditionals, Comparators, Logical Operators, While and For Loops, Functions, Data Structures and Object-Oriented Programming. He swiftly progressed to apply his programming concepts to create impressive programs in Data Analytics, Machine Learning, and even delving into Web Development and Web Apps creation. While these topics were usually taught at a higher level, Xavion has managed to show accelerated progress, completing Python fundamentals at 10 years old, and clearing the advanced Electives programme at 12 years old.

Xavion's prowess extends beyond the classroom, as evidenced by his accolades. Using his newfound knowledge and ability to code functional industry-level programs, he participated in the International Coding Showcase 2022. His project, which demonstrates how encryption and decryption can be used, attained the Distinction award. Furthermore, Xavion exuberates passion for programming and his eloquence also led to him winning the Best Presentation category and People's Choice Award.

An outgoing and enthusiastic student, Xavion exhibits a genuine and unrelenting passion for programming. His independent nature is complemented by his sound logical and computational thinking skills. He approaches challenges with determination and perseverance, consistently striving for excellence in his work. Noteworthy is his ability to translate theoretical knowledge into practical applications, exemplified by his creation of high-level Python programs that can solve real problems faced by our modern society. His Data Analytics Python project aimed to understand how professions and age affected spending habits through Exploratory Data Analysis (EDA). His Machine Learning project successfully applied rigorous Mathematics within his Python program to perform Image Classification.

Within the three short years that I have taught Xavion, he has shown remarkable growth in his programming journey and maturing as a person. With Xavion's exceptional qualities and achievements, coupled with his inquisitive nature and drive for excellence, I am confident that he will be a valuable addition to his school and he will definitely excel in his academic endeavours and future competitions. I wholeheartedly endorse Xavion and anticipate witnessing his continued growth and success within your institution.

Sincerely,

Hovan Tan, B.Eng. Computer Engineering (Hons), NUS
Educator, Coding Lab Asia

Transcript of Records of Study at Coding Lab

This letter serves to verify that Xavion Mirchandani has attended the following courses with us:

No	Course Code & Name	Course Duration	Course Duration (YYYY-MM)	Course Outline
1	P205 + P206 – Python Junior 1+2 (Ages 10-12)	20 Hours	2021-12	➢ Introduction to Python ○ Learn to install, setup and run Python ○ Introduction to the various data types (Eg. Strings, Float, Integers) ➢ Various Data Types ○ Learn and apply numerical data and Mathematics operators ○ Calculate the area of a Square/Triangle/Circle ○ Develop a BMI Calculator ○ Learn String (text) data and String manipulation ➢ Making Decisions with Conditional Operators ○ Syntax of if, if-then-else, if and e lif ○ Develop your own "Baymax" – Your Personal Healthcare Companion ➢ Logical operators and Truth tables ○ Learning and Applying logical operators (And, Or, Not) ○ Develop a Movie-Age Checker ➢ While Loops ○ Using while loops ○ Applying while loops to Mathematics (Eg. Prime numbers, Lowest Common Multiple) ○ Problem-sum solving with Guess and Check ➢ Using Modules and Libraries ○ Random numbers ➢ Hackathon and Challenges ○ Timed Challenges for students to stretch their abilities
2	P201+P202 - App Inventor 1 & 2 (Ages 10-12)	20 Hours	2022-01	➢ Introduction to App Inventor and its Interface ○ Learn about the Smartphone and its touch Interface ○ Load and run mobile Apps ➢ Events-Driven Programming ○ Use Variables and Procedures ➢ Graphics and Animation ○ Conditional/comparison Operators ○ Make animations come alive on your mobile phone ➢ Development of own Project

				○ Pour your knowledge into the cauldron to develop an interactive game ➢ Project Showcase ➢ Quick Review ○ Review of App Inventor 2 Interface ○ Brainstorm time for a complex app creation ➢ Media ○ Learn to use various media components ○ Voice Recognition ➢ Booleans and Conditionals ○ If-then…else-then ○ Logical Operators ➢ Design Thinking ○ Introduction to phases of Design Thinking (Observation, Ideation, Rapid Prototyping, User Feedback, Iteration, Implementation) ➢ Hackathon
	S111 – Python 2 S111P – Python Perfect 2(Ages 13-18)	10 Hours	2022-08	➢ Using For Loop and Rage ➢ Introduction to data structures and lists to develop a Shopping cart programme ➢ Understanding Strings and dictionaries to develop a text analysis programme ➢ Learning of useful libraries - Using matplotlib and purex, Plot functions and Equations
	S121 – Python 3 (Ages 13-18) S121P – Python Perfect 3 (Ages 13-18)	10 Hours	2022-11	➢ Lists and Dictionaries ○ Introduction to data structures ○ Create and use lists ○ Create and Use Dictionaries ○ Develop a shopping cart programme ➢ Strings ○ Understand Strings as a list ○ Manipulating strings ➢ Object-Oriented Programming (OOP) ○ Introduction to the concept of OOP (Objects and Classes) ○ Defining and using classes (OOP) ○ Developing a School Database program with OOP ➢ Program Design and Managing Exceptions ○ Applying design thinking ○ Making your program more robust ➢ Challenges

				○ Hangman Game ○ Phone Book ○ Text Analyser ○ Savings Projection ○ Actuarial Consultant Challenge
	S206 - Web Apps (Ages 13-18)	20 Hours	2023-03	➢ Quick Introduction to HTML ○ HTML Basics ○ Bootstrap ➢ Flask ○ Creating a basic Flask program ○ Flask Templates ○ HTML files with static data ○ Jinja Templating Engine ○ Web Forms ○ HTTP requests ➢ Models and Databases ○ Object Relational Mapping ○ One-to-Many Relationship ➢ Authentication ○ Flask-Login Module ○ User Accounts
	S207 - Modelling & Simulation (Ages 13-18)	20 Hours	2023-06	➢ Introduction ○ What is modelling and simulations ○ Examples of M&S - Weather, Flight, Bomb ➢ Probability ○ Concept of chance ○ Monte Carlo Simulations ○ Real world applications in actuarial Science, equities market and nuclear physics ➢ Python Tools ○ Pseudo random generators ○ SimPy ➢ Simulating Blackjack ○ Modelling framework ○ Understanding the mathematics ○ Strategies to beat the dealer Simulating the strategies ➢ Application to Bubble Tea ○ Modelling customer arrival ○ Modelling business process ○ Queuing Theory

	S201 - Data Analytics (Ages 13-18)	20 Hours	2023-12	➢ Analytics & Statistics ○ Introduction to Statistics ○ What M&Ms can teach you about Statistic ○ Descriptive Statistics ○ Inference Statistics ○ Application of Statistics ○ Simple Linear Regression ➢ Pandas ○ Introduction to Pandas ○ Pandas DataFrame ○ Reading JSON, CSV, Excel, HTML and XML Data ➢ Matplotlib & Plotly ○ Graphing with Matplotib and Plotly ○ Visualization with Matplotlib ➢ SciPy ○ Introduction to SciPy ○ Statistical testing with Spipy ○ Linear Regression ➢ Playing with Real World Data ○ Data Dot Gov ○ Kaggle ○ New Sites and Wikipedia ➢ Final Project ○ Create your own analytics project to analyze areas you really care about, be itsports, finance games
	S202 - Machine Learning & AI (Ages 13-18)	20 Hours	2024-03	➢ Introduction to ML & AI ○ What is Artificial Intelligence? ○ What is Machine Learning? ○ ML Project Development ○ Framework ➢ Data Management ○ Kaggle ○ Collecting Data ○ Managing Datasets ○ Splitting Data for Training ○ Validation and Testing ○ Data Preprocessing ➢ Hypothesis & Modelling ○ Hypothesis step ○ Model Creation and Training ○ Model Fitting ○ CNN (Convolutional Neural Network) ➢ Evaluation and Interpretation ○ Model Validation ○ Loss function

				○ RMSE ➢ Optimisation ○ Parameter tuning ○ Overfitting and Underfitting ➢ Hackathon
	S204 - Game Development (Ages 13-18)	20 Hours	2024-06	➢ Introduction: ○ Python Arcade ○ PyCharm Editor ○ Platformer Game ➢ Game Development Concepts ○ What are common components in successful games? ○ How are the design concepts applied? ➢ Game Design Principles: ○ 2D game engine ○ Making the game come to life with animations and movements ○ Adding interactivity among game characters and sound effects

According to our records, Xavion has met all course requirements and has shown great potential in programming.

This course was delivered entirely in English language.