



# ASEAN Developers Embrace GitHub Copilot

## Insights from Regional Hackathons

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## Situation Overview

GitHub Copilot is the world's most widely adopted AI developer tool, designed to increase productivity and boost developer happiness. From real time code suggestions and chat assistance in the IDE to breaking down complex coding concepts in natural language, GitHub Copilot empowers developers with AI across the software development lifecycle.

GitHub Copilot supports multiple languages and frameworks, including Python, JavaScript, React, and C#, and integrates with leading editors, including Visual Studio Code, Visual Studio, JetBrains IDEs, and Neovim.

When using GitHub Copilot, developers can devote more time to problem-solving and collaboration, reducing their workload on routine tasks and boilerplate code. In fact, developers that use [GitHub Copilot report](#) up to 75% higher satisfaction with their jobs than those who don't and are up to 55% more productive.

The adoption of GitHub Copilot in ASEAN countries, such as Singapore, Indonesia, Malaysia, Thailand, and Vietnam, continues to grow as organizations and their developers recognize the transformative power of AI-powered software development, and misconceptions around reliability, security, and return on investment are addressed.

## In this White Paper

This white paper explores the impact of GitHub Copilot on developers within the ASEAN region, focusing on its effects on productivity and developer satisfaction.

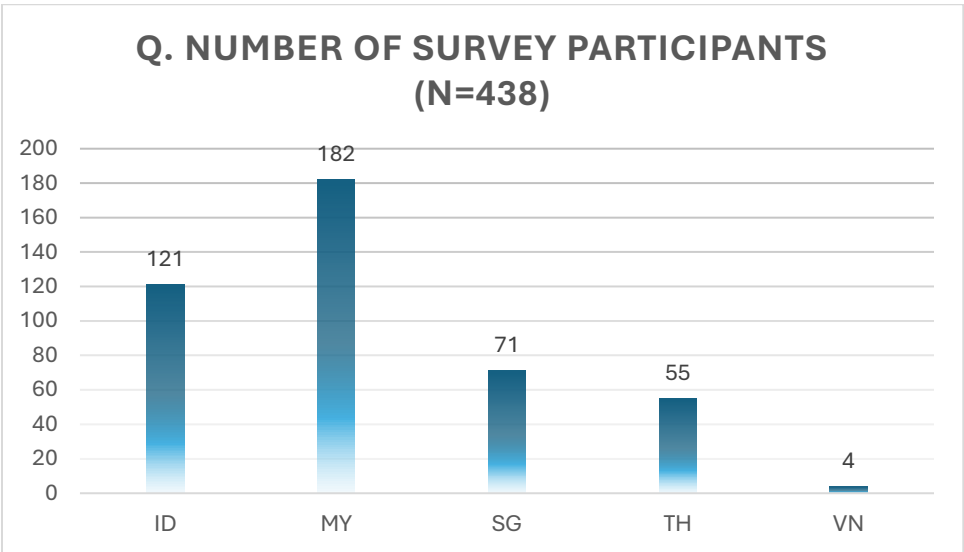
GitHub Copilot Hackathons took place throughout ASEAN in both virtual and physical formats from December 2023 to May 2024. Information was gathered from participants to understand their perspectives on GitHub Copilot. This whitepaper delivers research findings, gauging different aspects of developer productivity and how GitHub Copilot influenced developer satisfaction in the region.

## Research Methodology

Microsoft and GitHub, in collaboration with Partners, extended an invitation to more than 1000 developers and IT professionals across over 400 different companies to participate in the GitHub Copilot Hackathons. This event features a 20-minute introduction to GitHub Copilot, outlining how developers can use it, followed by an hour of hands-on practice with instructor support. Afterwards, attendees were asked to complete a survey to provide their feedback on the experience. The hackathons were conducted in the local languages such as English, Malay, Indonesian and Thai.

Survey Respondent Demographics

The survey respondents were mostly from Malaysia (42%), followed by Indonesia (28%), Singapore (16%), and Thailand (13%). Only four respondents were from Vietnam, which accounts for less than 1% of the total.



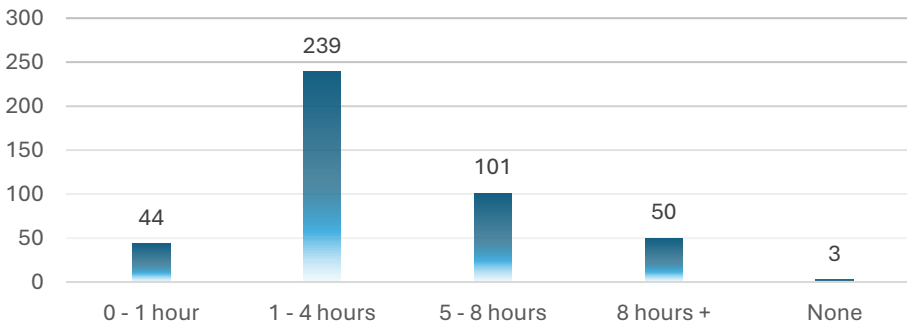
How Should Businesses Evaluate Returns on Investments

Assessing the benefits in developer productivity and return on investment (ROI) from implementing GitHub Copilot can be complex due to various economic elements, foreign exchange rates, developer wages, and productivity improvements.

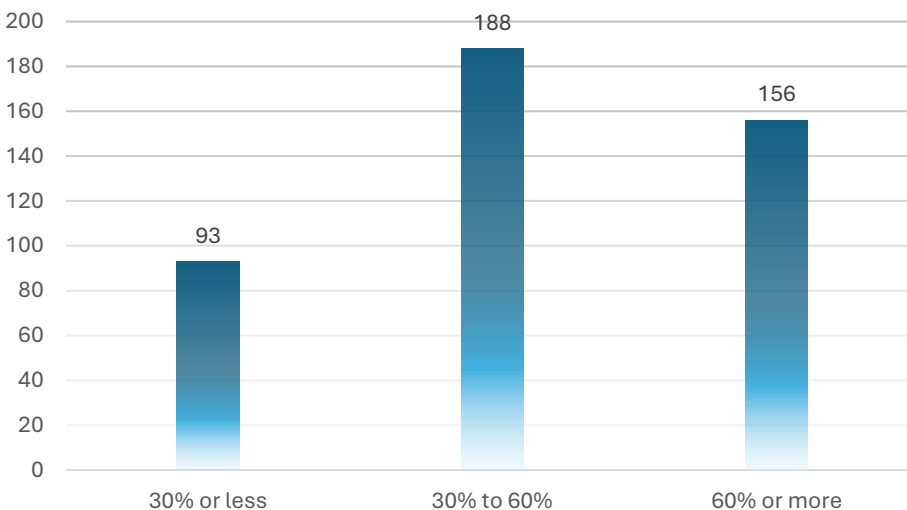
From feedback collected after 2-hour sessions with GitHub Copilot, developers across surveyed countries estimate a weekly saving of about 4.1 hours.

The survey also inquired about the typical amount of time participants devote to coding each workday. According to the chart below, which reflects responses from four different countries, most developers code for 4 to 8 hours daily, some coding less than 2 or more than 8 hours. The average daily coding hours are 6.2 for Malaysia, 5.9 for Indonesia, 6.1 for Singapore, and 6.3 for Thailand, with an aggregated average of 6.2 hours. These figures indicate that GitHub Copilot could potentially reduce weekly coding time by up to 66%, based on the anticipated savings of 4.1 hours. It's noteworthy that, despite a modest sample size from Vietnam, this group showed less than a 10-minute variation from the regional average time savings.

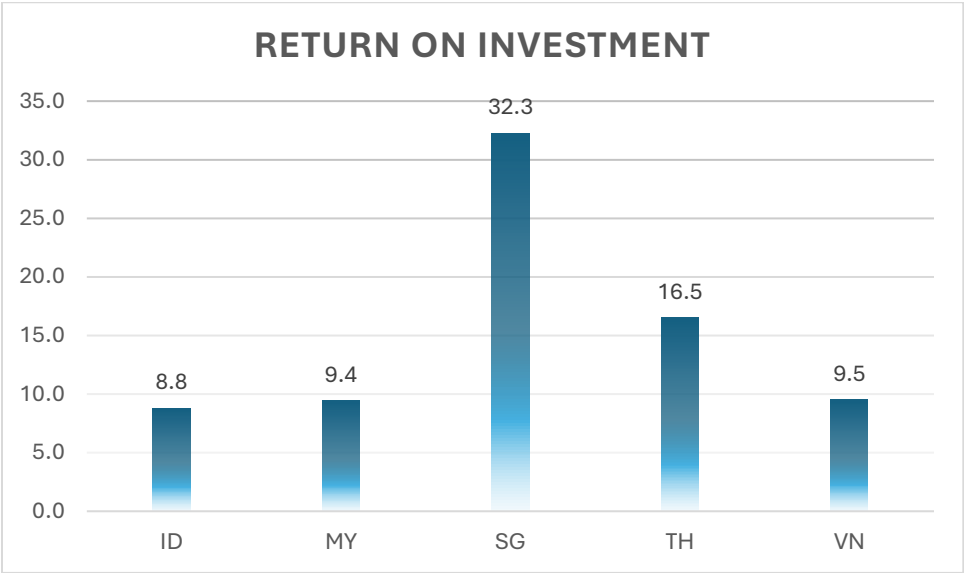
**Q. BASED ON WHAT YOU'VE SEEN AND EXPERIENCED DURING THE WORKSHOP, ROUGHLY HOW MUCH TIME DO YOU THINK COPILOT MIGHT BE ABLE TO SAVE YOU OVER A TYPICAL WORK WEEK?**



**Q. HOW MUCH TIME IN A TYPICAL WORK DAY YOU SPEND CODING?**



Calculating ROI involves considering the average pay of Senior Software Engineers per region, alongside the projected weekly time savings, minus the cost of a GitHub Copilot for Business license. This calculation excludes annual leave, healthcare, office expenses, and other worker-associated costs. Across varying economic contexts within each country, the data demonstrates a positive investment return ranging from 9x to 33x when developers utilize GitHub Copilot in their regular workflow.



**Table of Average Salary of Sr Software Engineer in Local Currency from various sources**

Avg. Pay/mth	Country
28,807,900 IDR	Indonesia
9,280 MYR	Malaysia
10,404 SGD	Singapore
126,750 THB	Thailand
48,500,000 VND	Vietnam

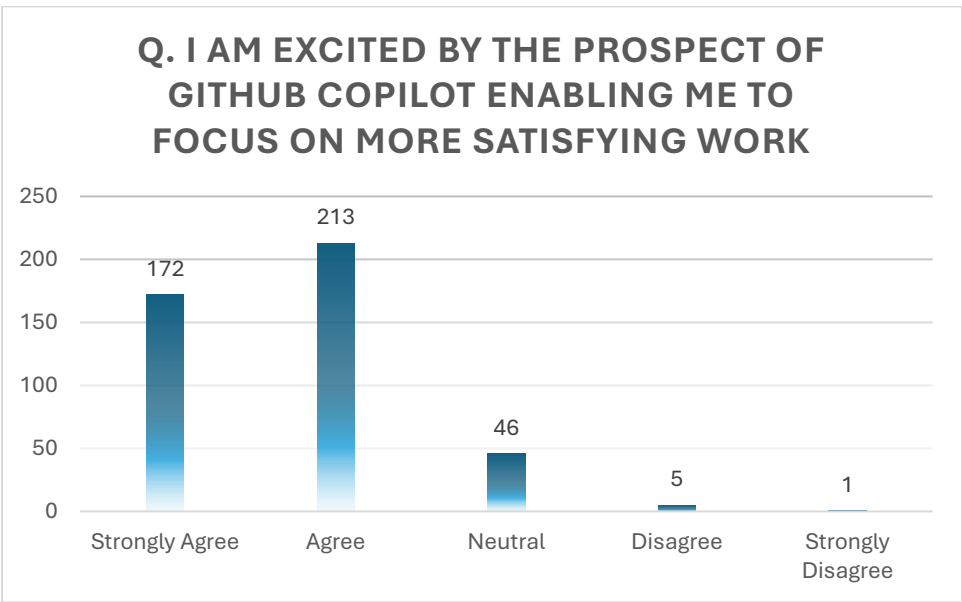
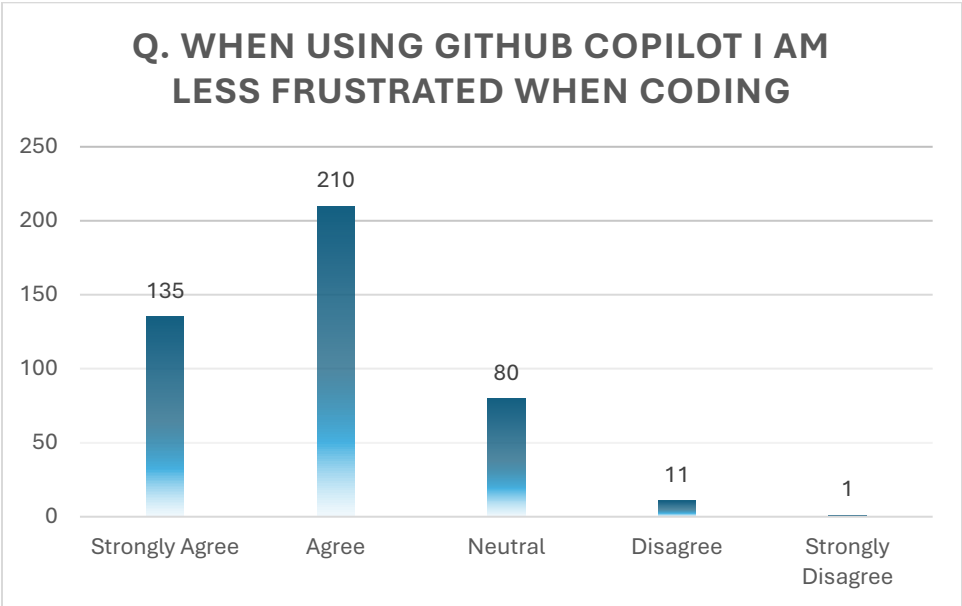
**Table of local currency conversion rates to USD in May 2024**

Currency	USD
IDR	0.000062
MYR	0.21
SGD	0.74
THB	0.027
VND	0.000039

Another important factor for developer productivity would be **developer satisfaction** when using the GitHub Copilot. The majority of the respondents agree that they are less frustrated when coding and generally feel excited by the prospect of GitHub Copilot enabling them to focus on more satisfying work, 97% of the respondents have a positive attitude towards GitHub Copilot's effect on their frustration levels.

The chart asking respondents on whether they are excited by the prospect of GitHub Copilot to enable them to focus on more satisfying work shows that out of 438 respondents, 137 strongly agree, 224 agree, 70 are neutral, 6 disagree and 1 strongly disagrees with the statement. This means that 82% of the respondents have a positive

attitude towards GitHub Copilot's effect on their excitement levels, while 2% have a negative one. The chart suggests that most developers find GitHub Copilot a stimulating and motivating tool that allows them to work on more creative and challenging tasks.



After participating in the hackathon, developers expressed how GitHub Copilot enabled them to focus more energy on problem solving and creative tasks and spend less effort on mundane tasks and boilerplate code. They also highlighted that while AI can assist developers, it is no substitute for them. While some may have reservations about AI automation and its implications for job security, it's important to recognize that tools like

GitHub Copilot are designed to augment, not replace, the developer's skill set. As evidenced by feedback from a hackathon participant. They also said that they learned a lot from the hackathon and enjoyed the experience of working with GitHub Copilot and other developers. They hoped to see more events like this in the future and to explore more areas of AI development. This shows that GitHub Copilot can increase the excitement and satisfaction of developers, especially beginners, by providing them with insights, guidance, and opportunities to grow and collaborate.

*“The event was fantastic, providing insights into the capabilities of AI. Initially, with the introduction of ChatGPT and other AI applications, I was concerned about job replacement, thinking they might come up with better and more efficient ideas than humans. However, this hackathon introduced a new perspective, highlighting how AI can assist us. While AI can generate code quickly, it's up to humans to determine the best code that aligns with the business case. This is particularly intriguing for beginners, and I hope to see more hackathons in this field. As a new developer, these events allow us to delve into areas beyond the scope of classrooms or daily work.” ~ Software Engineer, Malaysia.*

## A Valuable Tool For Developers and Testers

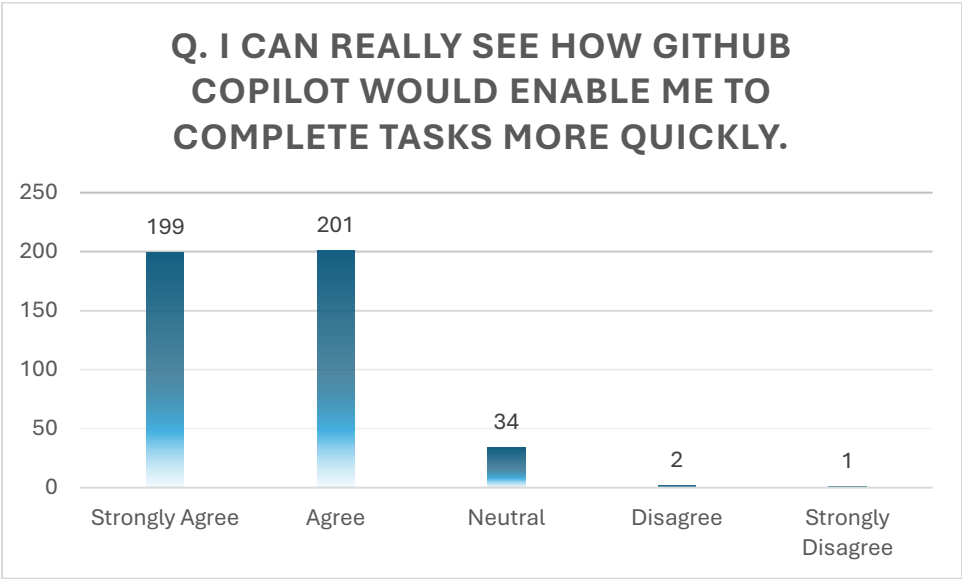
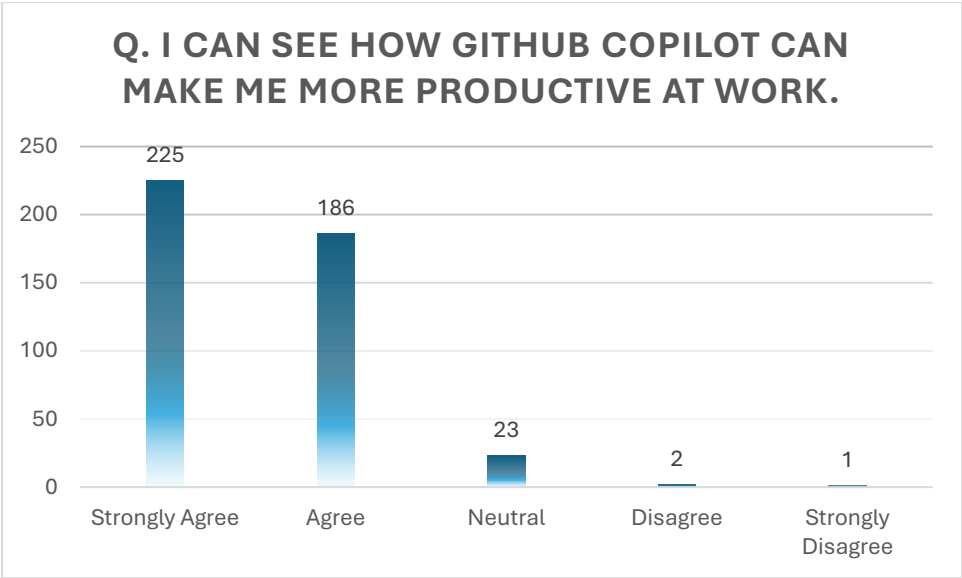
Participant feedback suggests that GitHub Copilot is a valuable tool for both developers and testers, enhancing coding efficiency, quality, and creativity. It also aids in discovering new fields and frameworks by offering code samples and related documentation. Nonetheless, a handful expressed concerns about its precision, relevance, and uniformity, with the hope that it would better match their personal preferences and styles, shifting focus from minutiae to the overarching picture. A participant recommended utilizing Copilot to streamline coding practices.

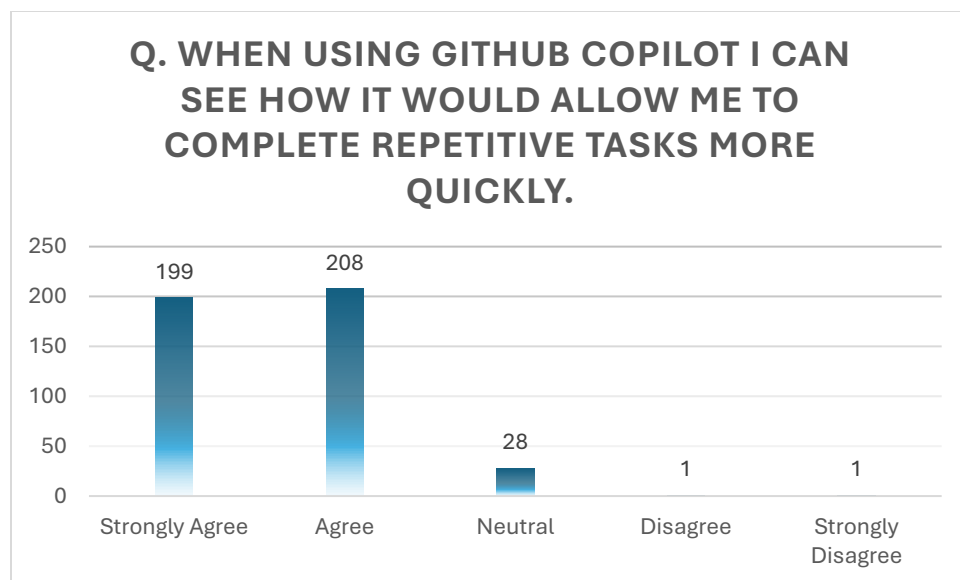
Overall, the feedback on GitHub Copilot has been positive and hopeful, suggesting that it could greatly improve the experiences of developers, particularly novices learning new languages. It offers insights and support, fostering skill enhancement and collaborative opportunities. The feedback underscores the advantages for the developer ecosystem and the potential paradigm shift in software development that Copilot could bring about. Suggestions were made for themed hackathons addressing specific sectors or issues to incentivize developers to leverage their abilities on concrete problems while exchanging learned strategies.

The survey responses involving hackathon participants revealed that 94% believe GitHub Copilot contributes to higher productivity, though there is a small dissenting opinion. The results also emphasize the view of GitHub Copilot as a critical tool for improving coding speed, quality, and creativity among developers and testers. In addition, 91% agree that



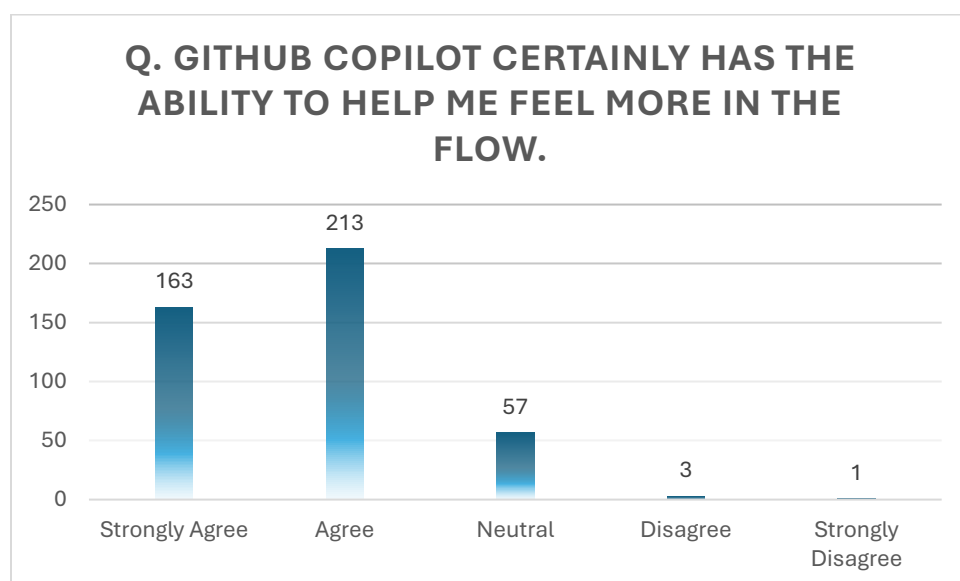
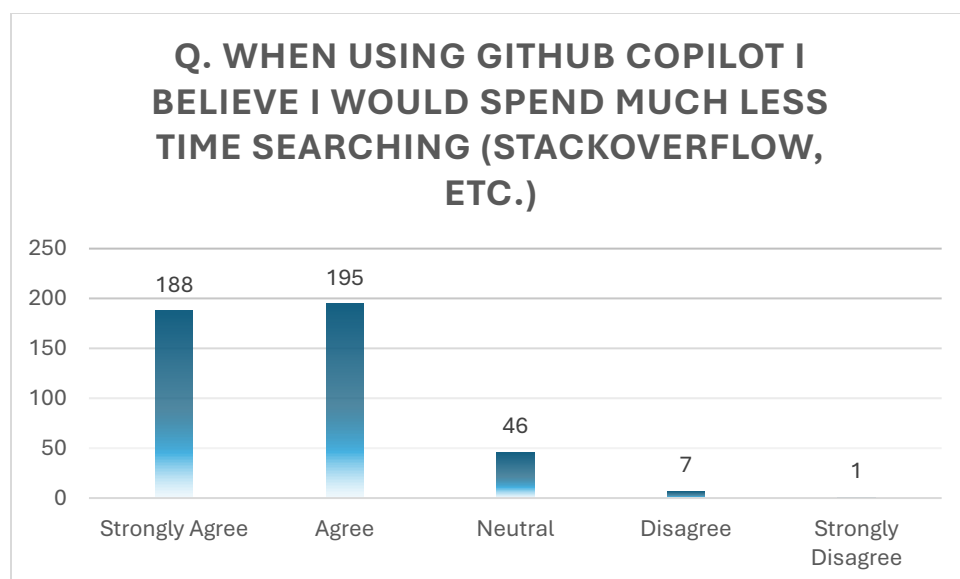
GitHub Copilot aids in rapid task completion, highlighting its effectiveness in enhancing performance through suggested code. Moreover, 93% either strongly agree or agree that GitHub Copilot facilitates the expedited completion of repetitive coding tasks.





One of the key benefits of GitHub Copilot is that it minimizes disruptions and distractions for developers, allowing them to focus on their core tasks and goals. According to the survey results, 87% of the hackathon participants strongly agreed or agreed that using GitHub Copilot would reduce their reliance on external sources for help when coding, such as Stack Overflow. This means that developers can spend less time searching for solutions and more time coding and creating. Furthermore, 85% of the participants agreed that GitHub Copilot could enhance their sense of flow, which is a state of optimal concentration and engagement in an activity.

Another benefit of GitHub Copilot is that it helps developers avoid the negative consequences of interruptions and context switching, which can impair their productivity and quality of work. According to a study in 2011, when programmers are interrupted from their coding tasks, it takes them an average of 10 to 15 minutes to resume their work, and another 5 to 10 minutes to regain their focus and mental state. This means interruptions can cause significant delays and disruptions in the coding process and increase the likelihood of errors and bugs. By using GitHub Copilot, developers can reduce their need to seek external help or switch to different sources of information, and thus maintain their concentration and momentum. GitHub Copilot can also help developers recover from interruptions faster, by providing them with relevant code suggestions that can remind them of their previous context and goals.



## Interpretation of the Hackathon's Impact and Future Prospects

The GitHub Copilot Hackathon showcased its versatility in supporting multilingual interactions, various programming languages, and a wide range of tasks, from web development to security analysis. It was an opportunity to test the capabilities and limitations of GitHub Copilot, and a chance to witness the impact of this technology on the developer community and partner networks. The hackathon participants represented a diverse group of developers from different backgrounds, skills, and interests, who shared a common goal of creating innovative and useful applications using GitHub Copilot. Moreover, the hackathon enhanced the visibility and value of GitHub Copilot and Microsoft,

as they showcased their cutting-edge technology and support for the developer community.

Looking ahead, GitHub Copilot has the potential to transform the future of software development, equipping organizations and developers with the power of AI for immense productivity gains. GitHub Copilot can enhance creativity and the speed of innovation for developers, by providing them with smart and relevant code suggestions that can save time, reduce errors, and improve code quality. GitHub Copilot can also empower developers to learn new skills and explore new domains, by exposing them to a vast repository of code examples and documentation that can help them understand and apply new concepts and frameworks. GitHub Copilot can also inspire developers to innovate and experiment, by generating novel and diverse code alternatives that can spark new ideas and solutions.

GitHub Copilot is not a substitute for human judgment and expertise, and it requires careful review and testing of the code suggestions before implementation. GitHub Copilot is also not a replacement for human communication and collaboration, and it requires clear and consistent documentation and feedback mechanisms to ensure the quality and usability of the code.

## Conclusion

ASEAN developers embraced GitHub Copilot, the participants reported positive experiences with the AI-powered code suggestion system, which helped them write code faster, learn new skills, and explore new possibilities. The hackathon also demonstrated how GitHub Copilot can support multilingual chat and comments, various programming languages, domains, and tasks, ranging from web development to security analysis to test cases design.

GitHub Copilot is a powerful assistant for individual developers and a catalyst for collaboration and innovation. By enabling developers to share their code suggestions, feedback, and best practices, GitHub Copilot fosters a community of learners and creators who can leverage each other's expertise and insights. Furthermore, GitHub Copilot can inspire developers to tackle new challenges and generate novel solutions, by providing them with relevant and diverse code examples.

We hope that this whitepaper has provided you with valuable insights into the event's outcomes and the role of GitHub Copilot in modern development practices. We invite you to join us in exploring the possibilities and opportunities that GitHub Copilot offers, and to share your feedback and suggestions with us. Together, we can shape the future of coding with GitHub Copilot.