

# REMOTE LEARNING IN THE TIME OF POST - COVID-19: INTERACTIVE PDPR SYSTEM FOR PRIMARY SCHOOL VIA VISUAL BASIC PROGRAMMING

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## ABSTRACT

*Abstract between 150-250 words only. It has been more than a year since the implementation of movement order control (MCO) on March 18, 2020, in Malaysia. In March 2020, PdPR 1.0 was initially implemented. Through this e-learning distance education, technology plays a key role in designing online learning environments that meaningfully engage students. To learn online via these platforms, a student would need to have access to the platform and guidance from parents. Some parents have faced various challenges since the introduction of PdPR. they cannot afford to provide sufficient gadgets for their children, and most of the students faced internet problem and did not have the knowledge to use technology and find it*



*difficult to participate in online learning. Teachers are also impacted by this problem when students learn online. The system development of this project is using a waterfall model that consists of requirements, design, and development phases. Hence, to create an application that would aid teachers and students in the process of online teaching and learning, this study introduces the application system using Visual Basic programming 2010 known as "VB," and it is designed to make software creation quick and simple while still being strong enough to construct complex programs. This study only focuses on the problem faced by primary school students (Year 4, 5, and 6) and on the curriculum's emphasis on four core subjects: Bahasa Melayu, English, Mathematics, and Sciences. Hopefully, using this application will give some excitement to teachers and students for their online teaching and learning.*

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## INTRODUCTION

All activities were affected because of COVID-19. Our daily routine was restricted during that time, and all learning, working, and purchasing were done online. Many sectors have been affected, and it has brought extraordinary challenges to all sectors, especially the educational sector. This happens automatically and requires changes in the daily routine, for example, from working at the office to working from home. Academic institutions have been impacted by these considerable shifts, which have required them to design alternative plans to meet the shutdowns. The scenario has also posed a challenge to the global education system, forcing educators to shift from face-to-face to online teaching. The Open and Distance Learning (ODL) technique is one of the most effective strategies for integrating virtual technology and allowing the teaching and learning process to continue. Online learning not only changes the existing curriculum but also brings a new mode of teaching and learning (Bonk and Graham, 2005).

The use of Microsoft Teams, Google Meet, Edmodo, and Moodle as

learning management systems, together with their applications for video conferencing, are a few methods supporting online distance learning that teachers can employ during a pandemic. Zoom, Skype for Business, WebEx, Adobe Connect, and other options for video conferencing are also often utilized. The use of technology has become an important part of teaching and learning. All these online platforms can be used to create and distribute educational materials and to facilitate two-way communication between teachers and students during a pandemic. However, several factors need to be considered when implementing technology for teaching and learning, including hardware and software accessibility, students' participation, and most crucially, pedagogy. According to a Channels News Asia post on May 21, 2020, the mathematics teacher said that most of her students could not seek guidance from their parents as the adults also do not have any prior experience using electronic devices to study. The first hurdle encountered by teachers is that not every child owns an electronic device, especially those from low-income families. This study designs the system for online home-based learning to help all primary school teachers in designing and delivering their learning content and will also help students have access to class materials without affecting their learning sessions during a pandemic.

## **LITERATURE REVIEW**

The COVID-19 pandemic has affected the economy, but many other concerns have surfaced that must be addressed immediately, such as school closures and their influence on learning, as well as the educational burden placed on kids, parents, and teachers. Most governments throughout the world have temporarily closed educational institutions to halt the spread of the COVID-19 pandemic. Schools are centers of social interaction and activity. When schools close, many children and teenagers miss out on important social interactions that are necessary for learning and growth. The lockdown has caused the government to face an unprecedented challenge of ensuring the continuity of learning at every level. Several countries have adopted different actions to deal with the educational crisis (Chang & Yano 2020). It forced the school and institution closure, thus shifting teaching and learning toward full home-based learning (HBL).

However, a seamless transition could be difficult, supported by

Norazman (2019), he finds that the physical quality in the classroom is an essential factor for having a fruitful learning session. Some of the researchers find that numerous challenges have been faced by students, including a lack of devices for online learning, unstable internet connectivity, a lack of technical device knowledge, schools' lack of experience with online education and also families' lack of financial preparation (Almanthari et al., 2020, Agormedah et al., 2020, Irawan et al., 2020). Parents also voiced their concerns around their children's increasing screen time, greater exposure to hazardous content online, decreased physical activity, and lack of social interaction. The issues that all schools need to consider for online teaching during the delayed start phase is how to use networks for teacher and student learning; subsequently, the management needs to be able to maintain teachers' and students' health and improve the quality and high efficiency of online teaching (Dai & Lin 2020).

However, there are a few related issues that need to be considered when shifting teaching and learning using technology, including hardware and software accessibility, screen time, ownership, student participation, and, most crucially, pedagogy. Online learning is the educational usage of technological devices, tools, and the internet (Means et al., 2009). Tallent-Runnels et al. (2006) stated that the persistent increase in technological innovation and internet accessibility has increased the motivation for online learning since the millennium began, but Joshi et al. (2020) concluded that the instructional achievement of online learning is debatable because it causes the absence of face-to-face relationships among learners and instructors. In contrast, in Singapore, the implementation of online home-based learning was relatively well accepted and implemented, even though it was just short notice (Davie, June 28, 2020; Kurohi, April 14, 2020; Sin, Jun 18, 2020). Hodges et al. (2020) distinguished well-planned online learning experiences from crisis- response courses delivered online. These researchers went so far as to coin the term "emergency remote teaching" to describe online education during the epidemic because the latter contrasts with quality or successful online learning. It is different compared to face-to-face learning, where students' seating arrangement in the classroom is one of the important factors that need to be considered because it will improve the student's comfort and focus during the learning process.

Online learning platforms (ODL) can be provided using a variety of

tools. A successful online learning process depends on trustworthy and user-friendly technology. The learning process may be hampered in some cases by technology that is neither seamless nor secure. Online learning can be supported by several different tools. Some of the more common video conferencing tools include Google Meet, Zoom, Jitsi, Microsoft Team, and Cisco Collaboration Solutions. Amir and Borhan (2022) based on their research find that using Google Classroom, Google Meet, and WhatsApp as collaborative tools for online learning was enjoyable for the students. For online distance learning, online video conferencing is a very useful tool, where students can fully benefit by reviewing previously recorded videos for their revision. Low connectivity, broadband, and audio and video quality are some of the constraints that must be addressed when using online video conferencing (Nambiar, 2020). Adzharuddin (2013) says a learning management system (LMS) is frequently used to support ODL, whereas an LMS is an online platform that connects teachers and students through online communication. By giving online materials, assignment discussions, and other online activities, the LMS also allows teachers to monitor and manage their classes. Some other institutions have their own LMS, like Ufuture, Blackboard, and Spectrum.

In becoming a new normal, online, or digital teaching, is a viable alternative to conventional face-to-face teaching and learning. Teaching online is not easy and it comes with many challenges. Paulette Delgado, who writes the article "Parents, Students, and Teachers Face the Challenges of Adapting to Homeschooling," said that another challenge is showing that many teachers do not have the technological skills and training necessary to teach online. It has been seen that some school administrations do not have digital platforms suitable for online teaching. The dynamics of online learning make tracking students' progress more difficult than it is in face-to-face classes. Teachers and parents play an important role in the technological world (Garima Singh, 2016) to help students identify their learning styles through online learning. Teachers should learn how to use online pedagogical functions through online learning, while parents can start learning how to use technologies or other applications to encourage students to learn online. Research evidence indicates that proper implementation of online learning in education improves the efficiency of the educational process (Garima Singh, 2016). Since it is also important for students to go to school, teachers may be able to use two methods to help their students

with learning styles, which are the face-to-face method and the online learning method. A teacher's role in building and maintaining an effective online learning environment is critical, and they must have a good strategy to ensure that learning objectives are achieved.

Difficulties in making the transition to online learning parents were concerned that a quick switch from physical to online classes would be a significant change for their children. There is no standard software application for all learning activities; teacher professional development is required to keep them current; online social networking platforms may be required for student discussion outside of official online lesson time, and students must be taught more self-directed skills and habits for learning in both online and face-to-face settings. To overcome all these issues, this project aims to help school administrators or teachers to design their online teaching platform. In this study, we introduce a new learning method to primary school teachers using Visual Basic 2010 Express. This project will help teachers and students in the online teaching and learning process.

## **METHODOLOGY**

### **System Development**

The development framework of the project is implemented using the System Development Life Cycle (SDLC) model. This project uses the Waterfall model where it approaches systems development linearly and sequentially, completing one activity before the other (Adetokunbo & Basirat, 2013). The sequential phases in the Waterfall Model are requirements, design, development, testing, deployment, and maintenance. As for this study, the phases involved only requirements, design, and development since it is solely provided for the use of primary school students in Year 4, 5, and 6 and it is just for learning purposes. Below is a look at three stages of the Systems Development Lifecycle for this project.

### **Requirements Gathering and Analysis**

Gathering and analysing requirements is the initial stage. Planning the project comes first. In order to identify the project's methodology,

deliverables, and anticipated outcomes, the school's (teachers') requirements are obtained, and analysis is then started. To identify who will use the system and how they will use it, the requirements are gathered, followed with a needs analysis. Collaboration with system end users (teacher and student) will be included in the needs analysis.

## **System Design**

The next stage is System Designation. At this level, the thorough requirements are converted into a complete detailed systems design. The main elements and their interaction are described in this design. The application storyboard is generated in this designing phase to illustrate how the application will operate.

## **System Development**

System Development constitute the third stage. Convert the Requirements Gathering and Analysis to the System Design into the System Development. Detailed mapping and exhaustive documentation are needed in order to put the idea into practise and create the application. In order to ensure that the application is designed to match the criteria established during the previous phases, the application will be developed in accordance with the results and findings in the requirement and design phase.

## **Software**

This project uses Microsoft Visual Basic 2010 Express to build a simple application to facilitate students and teachers during online teaching and learning. It is a free development tool, able to aid in designing and programming simple or complex applications. It has a nice look; the interface is well organized and optimized for fast functionality, and simplicity is an advantage for amateur programmers. It is designed to make software development easy and efficient while still being powerful enough to create advanced programs. Visual Basic provides a graphical user interface (GUI) that allows developers to drag and drop each one of the objects onto the form, edit properties, and adjust programming modules. Like other similar programming tools, the interface is simple with multiple elements, for example, progress bars, labels, buttons, picture boxes, menu strips, and so on.

## **PROJECT DESCRIPTION**

This project is implemented to help primary school students learn during online learning. It is to prevent them from missing notes or assignments given by teachers during online classes due to factors such as a lack of devices for learning, a less conducive environment, teachers' incompetence in using digital technology, and the attitude of students during e-learning sessions.

This project is specifically for online learning where teachers can store their teaching materials in the program, such as notes, assignments, and so on. If the teaching materials are still in Google Drive, students can use them and finish their homework at any time they want to before the due date. Teachers can also set grades on assignments (exercises or quizzes) in Google Forms as student assessments to measure their level of understanding of the subject.

By using this platform, students do not have to sign in using their email address as they can join classes or get teaching materials by simply selecting the subject (button). This simple project will help school administrations or teachers to have their online teaching materials platform.

### **Project Framework**

The Interactive Home-based Learning PdPR framework was depicted in Figure 1 using Visual Basic. This diagram depicted the step in the teaching process where the teacher obtains a shareable link after uploading all of the lesson materials and exercises to Google Drive. Students must copy the link that their teachers have provided and store it in the programme by clicking "link save". The option will be given to the student to select the subject and then decide whether they want to begin the learning session with notes or with exercises. Students use this approach to quickly click the exit button to end their online learning. The sub-topic of "User Interface Development for Interactive Projects" will explain the user interface for this project.



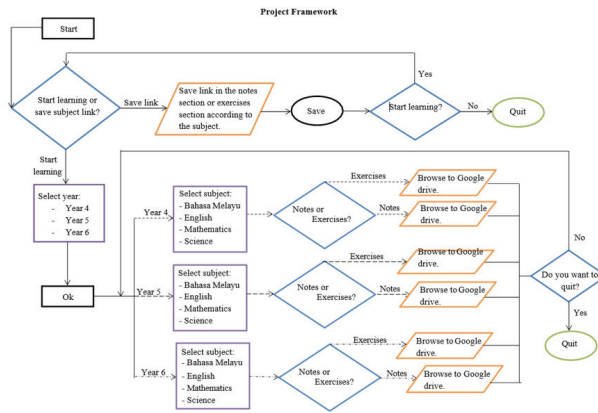
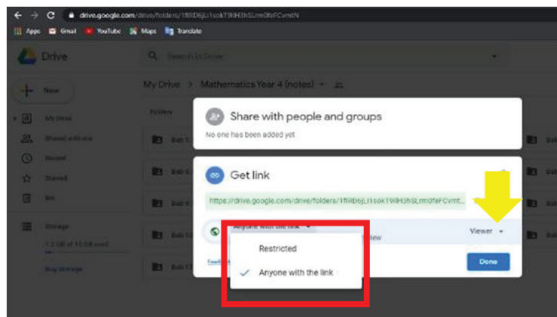


Figure 1. The framework of the Interactive PdPR System for Primary School Via Visual Basic Programming

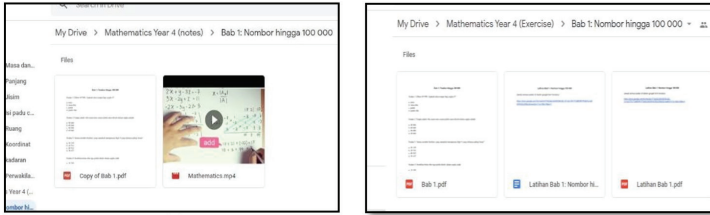
Source: Author

## User Interface Development for Interactive PdPR System Teacher’s guide (refer to Figure 2)

- 1.Upload teaching materials into Google drive and get a shareable link.
- 2.Setting: Change from ‘restricted’ to ‘anyone with the link’ for students to get access to notes or assignments (exercises) in Google drive.
- 3.Copy and share the link to students via messaging apps like WhatsApp or others.



(a)

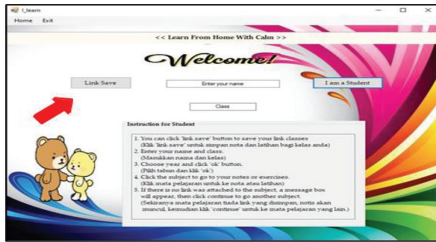


(b) (c)  
**Figure 2. Google Drive for Teacher’s Guide**

Source: Author

**Student’s Guide**

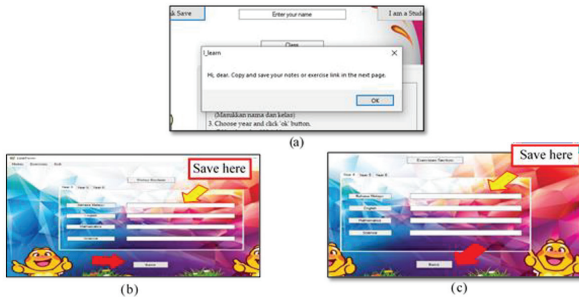
1. Enter name and class. Insert the link (given by the teacher) and click the ‘Link Save’ button (refer to Figure 3).



**Figure 3. Main page Interactive PdPR System**

Source: Author

2. Click ‘ok’ when a message box appears. Then click the ‘save’ button to save the link for notes or assignments (exercises) in the text box available (refer to Figure 4).



(b) (c) (a)  
**Figure 4. ‘Save Link’ Page**

Source: Author

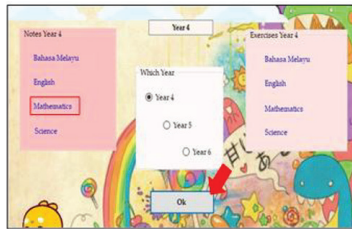
3. Click 'exit' at the menu strip and click the 'I am a student' button to start learning (refer to Figure 5).



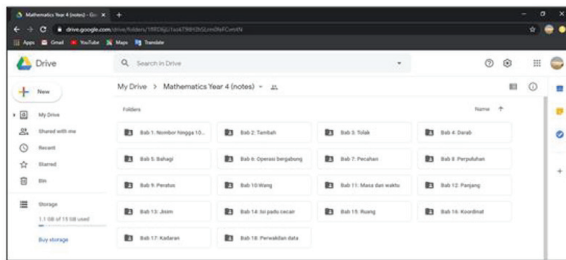
Figure 5. Main page Interactive PdPR System

Source: Author

4. Choose the year and click 'ok' to browse the notes in Google drive for any subject. For example, click on Mathematics Notes Year 4. Choose any subtopics. (Refer to Figure 6).



(a)



(b)

Figure 6. Main page for Notes and Exercises

Source: Author

5. Choose a year and click 'ok' to browse the assignments (exercises) in Google drive for any subjects. For example, click on Mathematics Exercises, Year 4. Choose any subtopic by clicking the Google form

link in the word file or PDF file. (Refer to Figure 7).

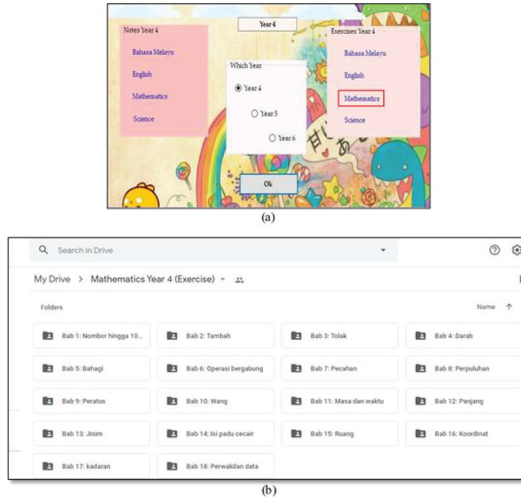


Figure 7. Main page for Notes and Exercises

Source: Author

## CONCLUSION

Home-based learning (PdPR) was introduced in all schools to make learning as seamless as possible at home without the need for physical interaction with other students. Nowadays, e-learning and virtual classrooms have become essential tools to allow students around the world to learn online and attend organizations that were previously unavailable. The COVID-19 pandemic has demonstrated that, in the future, educational institutions will require a specific platform for online learning in the face of a crisis. Using this application will help teachers overcome the difficulty of establishing two-way communication with students, and parents and alleviate the burden of problems faced in the implementation of home-based teaching and learning (PdPR) classes. The implementation of Interactive PdPR system with parental support could improve the relationship between children and parents.

This application allows students to access all the materials given by the teacher specifically when they need them. Using this application will also keep us safe and ensure the learning process is more efficient

and effective. This system can address problems that teachers, students, and parents may encounter while engaging in online learning, as well as effective and practical approaches to accomplish educational goals. The interactive PdPR system should be tested with elementary school kids for future research in order to see how well it works for learning activities and to move forward with the research into determining the effectiveness of the interactive PdPR system.

## **LIMITATIONS**

This study has a number of limitations, including the fact that it only focuses on students in Year 4, 5, and 6 of primary school and that it covers the whole curriculum for the four core disciplines of Bahasa Melayu, English, Mathematics, and Science. These subjects are the most crucial ones for school students to take in order to get ready for the future (Kevin e al 2015). According to project development for Interactive PdPR system, just three phases in the waterfall model are taken into account, including the requirement phase, in which it is stated that there are no precise procedures to follow and in which the project is defined and planned. The second phase is design, during which the necessary requirements from the first phase are analysed, the system design is made, and a design framework is produced. The project's final phase is development, during which we solely create the Interactive PdPR system by using Visual Basic 2010. This is due to the fact that this project is only provided for the use of level 2 primary school students and is only intended to be used for educational purposes.

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## **CONTRIBUTION**

All authors made significant contributions to this article. Samsiah, Ini

Imaina, Nur Insyirah and Aslina contributed to the idea of the interactive PdPR system, methodology, framework of this project and in writing the manuscript. All authors have read and approved the final manuscript.

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## CONFLICT OF INTEREST

The authors declare no conflict of interest.

## REFERENCES

- Bonk, C. J., & Graham, C. R. (2005). *The Handbook of Blended Learning: Global Perspectives, Local Designs*. Hoboken, NJ: John Wiley & Sons.
- Chang, G. C., and Yano, S. (2020). *How are countries addressing the Covid-19 challenges in education? A snapshot of policy measures*. Retrieved from World EducationBlog: <https://gemreportunesco.wordpress.com/2020/03/24/how-are-countries-addressing-the-covid-19-challenges-in-education-a-snapshot-of-policy-measures/> v x63gr.
- Dai, D., and Lin, G. (2020). Online home study plan for postponed 2020 spring semester during the COVID-19 epidemic: A case study of tangquan middle school in Nanjing, Jiangsu Province, China. *Best Evidence in Chinese Education* 4(2), 543- 547.
- Tallent-Runnels, Thomas, M. K., Lan, J. A., Cooper, W. Y., Ahern, S. Shaw, T. C., and Liu, S. M. X. (2006). Teaching courses online: A review of the research. *Review of Educational Research*, 76(1), 93–135.
- Joshi, O., Chapagain, B., Kharel, G., Poudyal, N. C., Murray, B.D., and Mehmood, S.R. (2020). Benefits and challenges of online instruction in agriculture and natural resource education. *Interactive Learning Environments*, 1402–1413.

- Kurohi, R. (April 14, 2020). *Singapore schools to shift to full home-based learning from April 8 to May 4 amid Covid-19 pandemic*. The Straits Times. Retrieved from <https://www.straitstimes.com/singapore/education/schools-to-shift-to-full-home-based-learning-from-april-8>
- Amir, A., F. and Borhan, R. (2022). Students' perception and preference towards open and distance learning (odl) during covid-19 pandemic: a case study of studio-based learning. *Malaysian Journal of sustainable environment*, 9(1), 285-302.
- Adzharuddin, N. (2013). Learning Management System (LMS) among University Students: Does It Work?. *International Journal e-Education, e-Business, e- Management e-Learning*, 3(3), 248-252.
- Adetokunbo Adenowo, A.A., and Basirat Adenowo, A. (2013). Software Engineering Methodologies: A Review of the Waterfall Model and Object-Oriented Approach. *International Journal of Scientific & Engineering Research*, 4(7), 427-435.
- Agormedah, E. K., Henaku, E. A., Ayite, D. M. K., and Ansah, E. A. (2020). Online learning in higher education during COVID-19 pandemic: A case of ghana. *J. Educ. Technol. Online Learn.* 3, 183–210.
- Almanthari, A., Maulina, S., and Bruce, S. (2020). Secondary school mathematics teachers' views on E-learning implementation barriers during the COVID-19 pandemic: the case of Indonesia. *EURASIA Journal of Mathematics, Science and Technology Education*, 16(7), 1-9.
- Davie, S. (2020). *Home-based learning set to be regular part of schooling post Covid- 19, says Education Minister Ong Ye Kung*. The Straits Times. Retrieved from <https://www.straitstimes.com/singapore/education/home-basedlearning-set-to-be-regular-part-of-schooling-post-covid-19-say>
- Garima, S. (2016). Challenges for Teachers in the Era of E-learning in India. *School edge International Journal of Multidisciplinary & Allied Studies ISSN 2394- 336X*, 3(2), 14-18.

- Hodges, C. S. Moore, B. Lockee T. (2020). *Trust and A. Bond, The difference between emergency remote teaching and online learning*. Educause Review. <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>.
- Irawan, A. W., Dwisona, D., and Lestari, M. (2020). Psychological impacts of students on online learning during the pandemic COVID-19. *Jurnal Bimbingan dan Kaunseling*, 7(1), 53–60.
- Kevin, D., Pearl, L. H., Mok and Gina Conti R. (2015). Core subjects at the end of primary school: identifying and explaining relative strengths of children with specific language impairment (SLI). *International Journal of Language & Communication Disorders*. 50(2), 226-240.
- Norazman, N., Ismail, A. H., Ja'afar, N. H., Khoiry, M. A., & Che Ani, A. I. (2019). A Review Of Seating Arrangements Towards the 21st Century Classroom Approach in Schools. *Malaysian Journal of Sustainable Environment*, 6(2), 21-47.
- Nambiar, D. (2022). The impact of online learning during COVID-19: students' and teachers' perspective. *The International Journal of Indian Psychology*, 8(2), 783-793.



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Tarikh : 20 Januari 2023



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