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Pengenalan Konsep dan Praktik Penggunaan Array pada Bahasa Pemrograman di SMA 2 Gunung Talang Kabupaten Solok

Introduction to the Concept and Practice of Using Arrays in Programming Languages at Senior High School 2 Gunung Talang, Solok Regency

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Abstract

Introduction to the Concept and Practice of Using Arrays in Programming Languages is an effort to provide education and guidance to teachers at Senior High School 2 Gunung Talang, Solok who are interested in computer programming. Knowledge of the use of arrays in programming languages is an important basis in the increasingly developing world of information technology. This community service activity aims to provide a broader understanding of the concepts and practices of using arrays in programming languages, especially for those who do not have a technical background in programming. In this activity, participants will be invited to understand the basic concepts of arrays, how to declare, initialize and access array elements in programming languages. This activity will provide an introduction to various types of arrays, such as one-dimensional arrays, two-dimensional arrays, and multidimensional arrays, as well as provide examples of practical use in everyday programming. Participants will also be taught about the benefits of using arrays, including how they can simplify code, increase efficiency, and optimize data management. It is hoped that the results of this service will provide benefits to the community by increasing their understanding of the use of arrays in programming languages. With this knowledge, participants become better prepared to overcome programming challenges and apply them in various fields, such as software development, data analysis, and information technology in general

Keywords: Community Service, Arrays, Programming Languages, Concepts, Practices, Technology Education.

Abstrak

Pengenalan Konsep dan Praktik Penggunaan Array dalam Bahasa Pemrograman merupakan upaya memberikan edukasi dan bimbingan kepada guru di SMA 2 Gunung Talang Solok yang berminat pada pemrograman komputer. Pengetahuan mengenai penggunaan array dalam bahasa pemrograman merupakan suatu landasan penting dalam dunia teknologi informasi yang semakin berkembang. Kegiatan pengabdian pada masyarakat ini bertujuan untuk memberikan pemahaman yang lebih luas mengenai konsep dan praktik penggunaan array dalam bahasa pemrograman, khususnya bagi mereka yang tidak memiliki latar belakang teknis dalam pemrograman. Pada kegiatan ini peserta akan diajak untuk memahami konsep dasar array, cara mendeklarasikan, menginisialisasi dan mengakses elemen array dalam bahasa pemrograman. Kegiatan ini akan memberikan pengenalan tentang berbagai jenis array, seperti array satu dimensi, array dua dimensi, dan array multidimensi, serta memberikan contoh penggunaan praktis dalam pemrograman sehari-hari. Peserta juga akan diajarkan tentang manfaat penggunaan array, termasuk bagaimana array dapat menyederhanakan kode, meningkatkan efisiensi, dan mengoptimalkan pengelolaan data. Hasil dari pengabdian ini diharapkan dapat memberikan manfaat bagi masyarakat dengan meningkatkan pemahaman mereka tentang penggunaan array dalam bahasa pemrograman. Dengan pengetahuan ini, peserta menjadi lebih siap untuk mengatasi tantangan pemrograman

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dan menerapkannya di berbagai bidang, seperti pengembangan perangkat lunak, analisis data, dan teknologi informasi secara umum.to the Concept and Practice of Using Arrays in Programming Languages is an effort to provide education and guidance to teachers at Senior High School 2 Gunung Talang, Solok who are interested in computer programming. Knowledge of the use of arrays in programming languages is an important basis in the increasingly developing world of information technology. This community service activity aims to provide a broader understanding of the concepts and practices of using arrays in programming languages, especially for those who do not have a technical background in programming. In this activity, participants will be invited to understand the basic concepts of arrays, how to declare, initialize and access array elements in programming languages. This activity will provide an introduction to various types of arrays, such as one-dimensional arrays, two-dimensional arrays, and multidimensional arrays, as well as provide examples of practical use in everyday programming. Participants will also be taught about the benefits of using arrays, including how they can simplify code, increase efficiency, and optimize data management. It is hoped that the results of this service will provide benefits to the community by increasing their understanding of the use of arrays in programming languages. With this knowledge, participants become better prepared to overcome programming challenges and apply them in various fields, such as software development, data analysis, and information technology in general

Keywords: Pengabdian kepada Masyarakat, Array, Bahasa Pemrograman, Konsep, Praktik, Pendidikan Teknologi.

INTRODUCTION

In today's digital era, programming has become a very important skill. Many jobs and daily activities involve the use of computers and software. Understanding the concept of arrays in programming is a crucial first step in utilizing technology (Pratiwi et al., 2020). The use of Information and Communication Technology (ICT) for learning purposes is one of the core competencies of teachers (educators/teachers) in the pedagogical aspect, referring to Permendiknas No. 16 of 2007 concerning Academic Qualification Standards and Teacher Competencies. The ability of educators/teachers (teachers) to use Information Technology will greatly impact the development of educators' abilities in the field of programming (Rezki & Hapsari, 2019). Currently, many students, students and teachers are interested in learning programming. An understanding of arrays allows one to be more creative in software development. With a good understanding of arrays, people can develop various types of applications and software solutions. Apart from that, arrays are often used in programming to store and manage data.

Arrays fall into the category of linear data structures. This structure is a collection of data items of similar type, so they are stored in adjacent memory locations. In an array data structure, when you know the address of just one data item, the location of other items or elements in the structure can be immediately known. Arrays consist of three main things, namely elements, indices, and length (Faqih et al., 2022). Elements are items stored in an array. Meanwhile, the index is a location that identifies an element in the array (starting from 0). Then, length indicates the number of elements the array can store. Arrays are a type of linear data structure. The data structure itself is used so that the programmer no longer needs

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to track the memory address of the data. Apart from linear structures, there are also three other types of structures, namely tree, hash, and graph (Joni et al., 2023). Returning to the array structure, this type of data structure which is often implemented in the C, C++ and Java programming languages stores homogeneous data in contiguous memory locations. This is because arrays store multiple elements of the same type. The array is then regrouped according to its dimensions. A one-dimensional structure is called a one-dimensional array. Meanwhile, structures with more than one dimension are called multi-dimensional arrays (Jehwae et al., 2023).

The importance of teachers/educators or students knowing the concept of implementing Array is that it will help improve their digital literacy. This can help them understand modern technology and contribute to digital development in society. Apart from that, understanding the application of arrays in programming languages can also advance people's critical thinking abilities in solving problems and developing solutions.

DEVOTION METHOD

This Community Service Activity (PKM) is carried out by providing socialization regarding the Introduction to the Concept and Practice of Using Arrays in Programming Languages. Implementation of activities can be described as follows:

1. Preparation
   Preparation for this activity includes material preparation, location survey, processing of permit letters

2. Screening
   At this screening stage, ensure that all equipment is ready to be brought to the location

3. Implementation of Activities
   The implementation of the plans that have been prepared in the socialization given to SMA 2 Gunung Talang, West Sumatra includes:
   a. Organizing socialization with material on Introduction to the Concept and Practice of Using Arrays in Programming Languages
   b. Provides knowledge about the use of Arrays in Programming Languages

4. Evaluation
   All socialization activities were carried out smoothly and successfully. Indicators for assessing the success of this activity include:
   a. 80% of invited participants attended the training.
   b. Implementation of all training activities.
   c. 40% of participants were able to understand the material provided.
   d. Statement of satisfaction from training participants.

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SERVICES RESULT AND DISCUSSION

The results of this service activity, it was found that every student at SMA 2 Gunung Talang, West Sumatra has begun to understand the concept of using arrays in programming languages and is able to apply array logic in creating a simple program. The students' interest in participating in this service activity was quite enthusiastic because they learned something new in the field of programming. In general, the community service activity entitled "Introduction to the Concept and Practice of Using Arrays in Programming Languages" is as follows:

a) Provide array concept programming training to students in one of the programming languages, namely C++
b) Give an example of an array logic case to students that can be solved together.
c) Participants are trained directly to create array applications with language software C++ programming

This community service activity is supported by the Research Institute and Main Potential University Community Service and carried out by the implementing team with through:

Figure 1. The presenter provides an explanation

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Figure 2. Students and presenters

CONCLUSION

Based on the analysis of the results of the activity, it can be concluded that the importance of students' awareness and ability to use computers well. With socialization and training regarding the concept of arrays in one of the programming languages, it can improve students' logical abilities and interest in learning more about programming languages and being able to create and even develop other programs.

THANK YOU

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