Pascal Programming Language Survey

19CSE100 - PROBLEM SOLVING AND ALGORITHMIC THINKING

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Outline

History of Pascal

Pascal was developed by **Niklaus Wirth**, as a small, efficient language intended to encourage good programming practices using structured programming and data structuring. It is an imperative and procedural programming language and was named in honour of **Blaise Pascal**, the French mathematician, philosopher, and physicist.
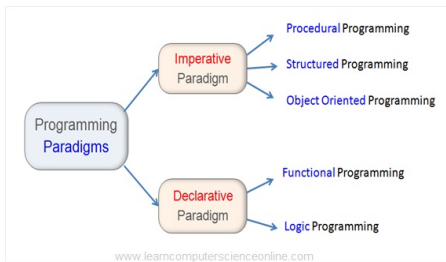
- Pascal was developed on the pattern of the **ALGOL 60** language.
- Wirth was involved in the efforts to improve the language as part of the **ALGOL X** efforts and proposed a version named **ALGOL W**.
- ALGOL W, however, was not accepted and the ALGOL X process was shut down.
- In 1968, Wirth decided to abandon the ALGOL X process and work on improving ALGOL W.
- The improved ALGOL W was released in 1970 as Pascal.
- The language then became very successful in the 1970s, it was even used to teach programming at the university level in the 1980s. It was also used in production settings for writing commercial software.
- It was displaced by the **C programming language** in the late 1980s and early 1990s.

Programming Paradigm

The term programming paradigm refers to a style of programming. It does not refer to a specific language, but rather it refers to the way you program. It is briefly divided into types

- Imperative Paradigm
- Declarative Paradigm

Figure: Programming paradigms

Programming Paradigm

Pascal is a **Procedural** programming language

Definition

- Imperative programming is a paradigm of computer programming where the program describes steps that change the state of the computer. The type of imperative programming where a procedure is defined using blocks of code is called procedural language.

- A procedural language is a computer programming language that follows, in order, a set of commands. Procedural languages are common types of programming languages used by script and software programmers.

Why use Pascal?

- Pascal allows programmers to define complex structured data types and build dynamic data structures, such as lists, trees, and graphs. Pascal offers features like records, enumerations, and dynamically allocated variables with associated pointers and sets.
- Pascal allows nested procedure definitions to any level of depth. This truly provides a great programming environment for learning programming.
- Skype, Total Commander, TeX, Apple Lisa are amongst the most notable implementations of the Pascal language.

Operating systems written using Pascal

Many operating systems have been written using the Pascal programming language.

- **Classical Mac OS** (not to be confused with Mac OS) is the most notable operating system that was nearly entirely written in pascal.
- **Lisa OS**, and **Lilith system software** were also written in pascal.
- **Xerox Star** was written in the **Mesa programming language**, a part of the pascal family.
- **fpos**, **StreamOS**, and **FP-RTOS** were written in **Object Pascal** using Free Pascal Compiler.

- The language was influenced by the **ALGOL** family of programming languages.
- It influenced the **Modula-2** programming language, which was developed between 1977 and 1985 by Niklaus Wirth. **Oberon language** is heavily influenced by pascal as it has its roots in Modula-2.
- The **Mesa** programming language is a modular language based on pascal.

```pascal
program HelloWorld(output);
begin
    Write('Hello, World!')
    {No ";" is required after the last statement of a block -
        adding one adds a "null statement" to the program, which is ignored by the compiler.}
end.
```

Figure: Hello World program

Pascal programs start with the program keyword with a list of external file descriptors as parameters; then follow the main block bracketed by the **begin** and **end** keywords. Semicolons separate statements, and the full stop (i.e., a period) ends the whole program (or unit). The letter case is ignored in Pascal.

- **Delphi** (commercial pascal) is used to write software for Police Cars, Network Departments together to Share Data, County-wide Search Engines, Multi-State Data Mining, 911 Emergency Systems all over the US, Report Engines, Warrants Management Systems, and much more.
- Free Pascal and Modern Pascal are used to develop Retail Accounting Systems, Points of Sales, Extremely large-scale Web Solutions (Alibaba), Desktop Utilities, etc.

https://en.wikipedia.org/wiki/Pascal-(programming-language)

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