

# PostgreSQL Administration Basic course



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Authors: Egor Rogov, Pavel Luzanov, Ilya Bashtanov

Translated by Alexander Meleshko

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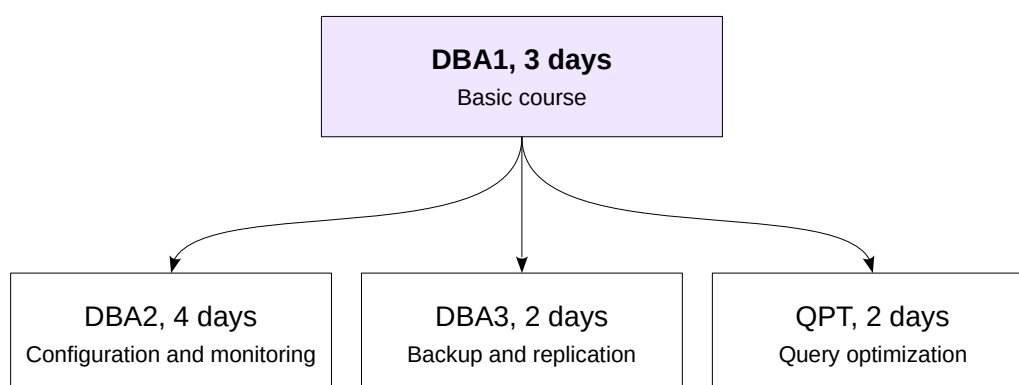
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Prior knowledge of the basics of the **SQL** language is required to complete all courses. There is no course on the SQL language in our line of courses, but there are many books and other educational resources with which you can master SQL.

For administrators, we offer the following courses.

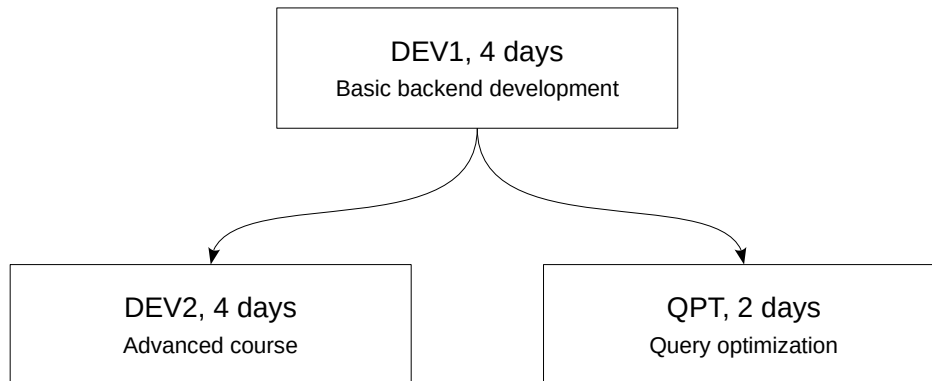
The **DBA1** course (this one) is a basic overview course. It provides general information about the architecture of PostgreSQL, the installation process, basic configuration and server management. It also considers basic administration tasks and access control issues. Lastly, it provides an overview of backup and replication mechanisms.

The **DBA2** course focuses on determining appropriate configuration parameters based on an understanding of the internals of the server. It also talks about monitoring the server and using feedback for iterative parameter tweaking.

The **DBA3** course is devoted to backup, as well as physical and logical replication configuration and scenarios for its use. It also provides an overview of the methods and difficulties of building highly accessible, scalable clusters.

The **QPT** course examines in detail the mechanisms for planning and executing queries, discusses instance parameters related to performance, and examines the options for finding problematic queries and optimizing them.

# For backend developers



3

For backend developers, we offer the following courses.

The **DEV1** course is the introduction to backend development. It provides general information about the architecture of PostgreSQL and the use of basic database objects; server-side programming in SQL and PL/pgSQL languages using basic data types (including the composite type and arrays), as well as fronted interactions.

The **DEV2** course examines the features of the server's internal structure that affect the development of application code, and comprehensively discusses extensibility: the ability to extend server mechanisms with your own code, which allows you to use PostgreSQL to solve a wide variety of tasks.

The **QPT** course is intended for both developers and administrators.

Developers may also be interested in administration courses if there is a need to study the internal structure of PostgreSQL in more detail, as well as in the case when there is no dedicated administrator role on the project.

<https://postgrespro.com/community/courses>

# About the DBA1 course



Duration: 3 days

## Prior knowledge requirements

- minimal familiarity with databases and SQL
- Unix familiarity

## What competences will be acquired

- general information about the PostgreSQL architecture
- installation, basic configuration, server management
- data organization at logical and physical levels
- basic administration tasks
- user and access management
- understanding backup and replication

# Materials used



## Pre-configured virtual machine

Xubuntu OS  
PostgreSQL 13  
documentation in English

## Course handouts

presentations, demonstrations, practical assignments and assignment keys  
(in html and pdf)  
reference materials, such as Unix commands used in the course,  
and a chart of the main tables of the system catalog, with psql commands

5

If you are taking the course on your own, start with the Student's guide. Among other things, it shows where to download and how to use the virtual machine and other materials. All course materials, including the Student's Guide, are available at: <https://postgrespro.com/community/courses/DBA1>

Completing practical assignments is very important to gain the basic skills in working with PostgreSQL. Try to complete the assignments yourself first, and then review the provided keys, even if the assignment did not raise questions. Assignment keys may contain additional information that is not mentioned in presentations and demonstrations.

Course handouts (presentations, demonstrations, practical assignments and keys) are available in two formats: html is good for browsing and copying code snippets, while pdf is split in pages and is more convenient for printing.

Additional reference materials will help you quickly find the information you need.

# Course outline and schedule



Each training day is approximately 6 hours + lunch (1 hour)

Each lesson usually consists of:

- presentation and demonstrations: ~20–60 minutes

- practice: ~20–30 minutes, including a break

## Basic tools

- 01. Server installation and management
- 02. Using psql
- 03. Server configuration

## Architecture

- 04. PostgreSQL overview
- 05. Isolation and MVCC
- 06. Vacuuming

## Architecture (continued)

07. Buffer cache and WAL

## Data organization

08. Databases and schemas

09. System catalog

10. Tablespaces

11. Low level

## Administration

12. Monitoring

## Access control

13. Roles and attributes



## Access control (continued)

- 14. Privileges
- 15. Row level security
- 16. Connection and authentication

## Backup

- 17. Overview

## Replication

- 18. Overview