**Current Shell and Subshell Concept in Bash**

**1. Current Shell**

The **current shell** is the shell session that you are actively using. It is the environment where commands are executed when you open a terminal.

* When you log in to a Linux system, a default shell (like Bash) starts as your **current shell**.
* To check your current shell, use:

bash

echo $0

This command displays the name of the shell currently being used.

* To find out which shell processes are running for your session, use:

bash

echo $SHELL

ps -p $$

* + $SHELL shows the default shell for your user.
  + ps -p $$ shows the process ID (PID) and name of the current shell.

**2. Subshell**

A **subshell** is a new instance of the shell that is created from the parent shell. It runs separately but inherits environment variables from the parent.

* **Creating a Subshell:**
  + A subshell is started when you use parentheses () in a script or command.
  + Example:

bash

(echo "This is a subshell"; echo "Subshell PID: $$")

echo "Current shell PID: $$"

Output:

yaml

This is a subshell

Subshell PID: 12345

Current shell PID: 67890

* + - The PID of the subshell (12345) is different from the current shell (67890), showing that it runs in a separate process.
* **Checking if You Are in a Subshell:**

bash

echo "Shell PID: $$"

( echo "Subshell PID: $$" )

* **Subshells Do Not Affect the Parent Shell:**

bash

VAR="Hello"

( VAR="Changed in subshell" )

echo $VAR # Output: Hello

* + The variable change inside the subshell does not affect the parent shell.

**3. Common Bash Commands Related to Shells**

Here are some useful Bash commands to work with shells and subshells:

| **Command** | **Description** |
| --- | --- |
| echo $0 | Shows the current shell name. |
| echo $$ | Displays the PID of the current shell. |
| ps -p $$ | Shows details of the current shell process. |
| (command) | Runs command in a subshell. |
| { command; } | Runs command in the current shell. |
| bash | Starts a new Bash shell (subshell). |
| exit | Exits the current shell or subshell. |
| exec bash | Replaces the current shell with a new shell instance. |