DIFFERENCE BETWEEN GIT AND GITHUB

**Git** and **GitHub** are related but serve different purposes in the context of version control and collaborative software development:

1. **Git**:
   * **Definition**: Git is a distributed version control system designed to track changes in source code during software development.
   * **Functionality**:
     + **Local Repository**: Git operates locally on your computer, allowing you to create repositories, track changes (commits), and manage branches without needing a network connection.
     + **Version Control**: It tracks changes made to files over time, facilitating collaboration among multiple developers.
     + **Branching and Merging**: Git allows branching to work on features or fixes independently and merging changes back into the main codebase.
     + **History and Rollback**: Git maintains a complete history of commits, enabling developers to revert to previous states if necessary.
   * **Usage**: It is used by developers to manage and collaborate on software projects, ensuring version control and code integrity.
2. **GitHub**:
   * **Definition**: GitHub is a web-based platform built around Git that provides hosting for Git repositories.
   * **Functionality**:
     + **Remote Hosting**: GitHub hosts Git repositories on its servers, allowing developers to store their code remotely.
     + **Collaboration**: It enhances Git's capabilities by offering features like pull requests, issue tracking, project management tools, and team collaboration.
     + **Code Review**: GitHub facilitates peer code reviews through pull requests, where developers can discuss and review proposed changes before merging them.
     + **Integration**: GitHub integrates with various third-party tools and services, enhancing its functionality for continuous integration, deployment, and project management.
   * **Usage**: It is used by teams and open-source communities to host, manage, and collaborate on software projects, making development more transparent and efficient.

**Key Differences**:

* **Nature**: Git is a version control system that runs locally on a computer, while GitHub is a web-based platform that provides cloud-based hosting and additional collaboration tools.
* **Functionality**: Git manages source code versioning and history locally, whereas GitHub extends Git's capabilities with remote hosting, collaboration features, and project management tools.
* **Usage**: Git is essential for version control and managing changes locally, while GitHub facilitates collaboration, code hosting, and community interaction around Git repositories.
  + - In essence, Git is the core technology for version control, while GitHub provides a platform to host.

| **Feature** | **Git** | **GitHub** |
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| **Type** | Version control system | Web-based platform for hosting Git repositories |
| **Purpose** | Manages source code versions and tracks changes | Facilitates collaboration and project management |
| **Installation** | Local installation required | Cloud-based service, no local installation needed |
| **Usage** | Command-line tool (with some GUI options) | Web interface, GitHub Desktop, command-line |
| **Repository** | Local and remote repositories | Hosts remote repositories |
| **Collaboration** | Limited to local repositories or self-hosted | Offers extensive collaboration tools like pull requests, issues, and project boards |
| **Access Control** | Managed by repository owner locally | Managed via GitHub with granular permissions |
| **Issue Tracking** | Not built-in, requires additional tools | Integrated issue tracking and project management |
| **User Management** | Local user accounts and permissions | Centralized user management and permissions |
| **Community** | No community features | Social coding features like profiles, followers, and activity feeds |
| **Integrations** | Can be integrated with various CI/CD tools | Built-in integrations with CI/CD, third-party services, and GitHub Actions |
| **Backup** | Managed locally by the user | Automatic backup and redundancy provided by GitHub |
| **Cost** | Free and open-source | Free for public repositories, paid plans for private repositories and additional features |