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Setting Up a React Project from GitHub

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Introduction

GitHub is the most widely used hosting service provider for projects and files to manage data changes effectively. Apart from repository hosting, GitHub also offers many other services like `gists`, CI/CD integration, package publication, GitHub APIs, GitHub Pages, sponsors, and much more. The `create-react-app` tool automatically adds a `.gitignore` file that contains the names or patterns to ignore files/directories while pushing the code to the

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GitHub server. `git` and `GitHub` are widely used to develop software in a collaborative environment. This guide explains the details of setting up a React project from a GitHub repository using different methods.

Basic Terms and Command of Git

There is some important terminology related to `git` files and commands that are required to understand how `git` works:

- `git` is a tool to manage the history of a project using `git` commands. The history details are stored in a hidden directory named `.git`.
- `repository` is a conventional name of a `git` project hosted on the GitHub server.
- `.gitignore` files contain the names (or patterns) of the files or directories that will neither be tracked nor uploaded to a GitHub repository by `git`.
- `remote` is the command used to add SSH or HTTPS URL links of a GitHub repository.
- `origin` is just a conventional name for a GitHub repository URL.
- `staged` can be visualized as a bucket of files or directories whose changes are ready to be stored. The `add` command is used to stage changes.
- `commit` is used to store the state of all the staged files with an optional message.

- `pull` is used to copy the code from a remote branch in the current project.
- `push` is used to move the committed changes to a remote repository.

Prerequisite:

Install the following tools to set up a GitHub project:

- The `git` tool is used to set up an environment to execute `git` commands, so download and install the git tool.

Optional

- `Putty` is a tool for windows to generate SSH keys. Download and install the Putty tool as per your Windows OS type (32 or 64).

Clone a Repository Using SSH Link

Cloning is the process of creating a local copy of a remote repository. A GitHub repository can be cloned using an SSH or HTML link. SSH is a protocol to securely communicate with a server using a handshake mechanism and public-key cryptography technique. A secure connection allows you to execute `git`

instructions from the command line (terminal) without confirming GitHub credentials for every push/pull operation.

Follow the below steps to create an SSH public/private key pair and add the public key to the `GitHub` account:

1. Add GitHub account details

`git` maintains a global and local (per project) configuration file that is used to store required details like email, user-name, editing software, etc. Update the value of your GitHub account user name and email in the `git` configuration file:

bash

```
git config --global user.name "Your name here"
git config --global user.email "your_email@example.com"
```

2. Generate SSH keys

SSH keys can be generated using `git` bash or the Putty tool to generate keys. Follow the below steps to generate SSH keys on Mac or Linux:

If an SSH key already exists then you can use the existing key.

- Generate SSH Keys using `ssh-keygen`:

bash

```
ssh-keygen -t rsa -C "your_email@example.com"
```

Press enter for every input to generate the key.

> *A `passphrase` can be used to provide an extra layer of security to SSH keys. If a passphrase if used then `git` will prompt to enter the `passphrase` before using the SSH key, although `passphrase` can be saved in `ssh-agent` like key-chain access to automatically provide the value of the `passphrase`.*

- Copy the generated SSH key:

bash

```
# Mac
pbcopy < ~/.ssh/id_rsa.pub
```

On Linux, get the content of the SSH key using the `cat` command:

bash

```
cat < ~/.ssh/id_rsa.pub
```

For Windows, the key can be generated using `git` `bash` (or putty), so open the `git` `bash` console and type:

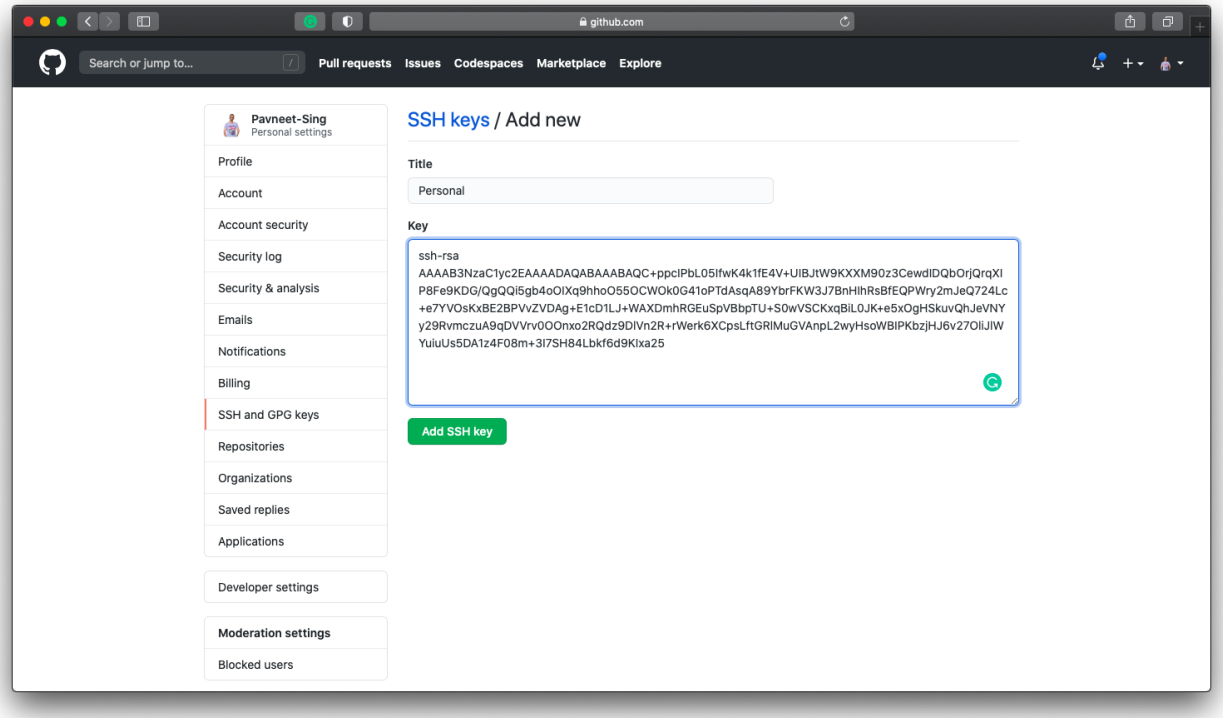
bash

```
ssh-keygen -t rsa
```

Now copy the content of `your_home_directory/.ssh/id_rsa.pub` file.

3. Add SSH to GitHub account

Open settings from the profile icon, select **SSH and GPG keys**, and add the copied SSH key:



4. Clone Project

Use the `git clone` command to clone the project in the current directory, using an `SSH` link:

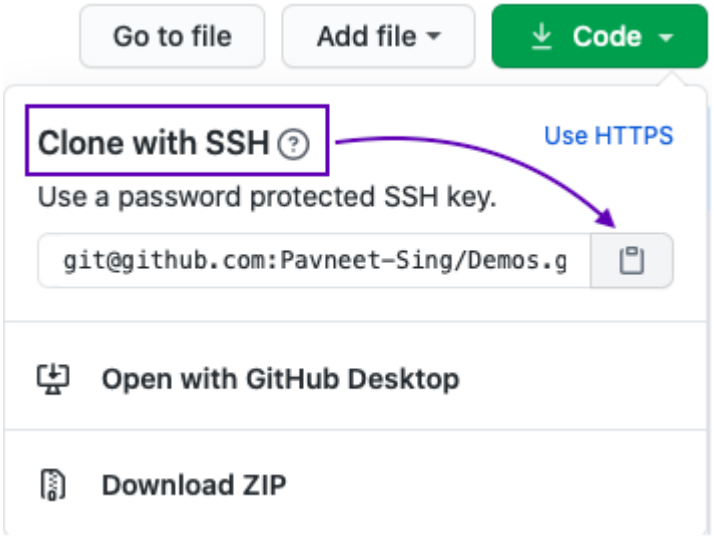
bash

```
git clone git@github.com:/UserName/RepoName.git
```

> *An SSH link of a GitHub repository can be only be retrieved via a logged-in GitHub account.*

Clone a Repository Using HTTP Link

An HTTP URL is used to clone any public or private repository from a GitHub account. The major drawback of using an HTTP URL is that `git` will ask for a user-name and password for authentication before performing any operation on a GitHub repository. To clone a GitHub repository, copy the HTTP URL of the GitHub repository



execute the `clone` command:

bash

```
git clone https://github.com/UserName/RepoName.git
```

Clone a Repository Using GitHub CLI

The GitHub CLI brings capabilities of GitHub web UI to the command line to perform operations like creating a pull request, track issues, fork a repository, etc. Use the `auth` command to authenticate the account and clone the project using the `clone` command:

bash

```
gh auth login
gh repo clone UserName/RepoName
```

- The `auth` command can take a `--web` flag to authenticate using a browser. It can also accept authentication token using a `--with-token` flag.

bash

```
gh auth login --with-token < myGitHubToken.txt
```

- The `clone` a command allows to omit the current user name and can work with the repository name associated with the logged-in user account:

```bash
gh repo clone RepoName
```

Alternative Options to Set Up a Repository

There are two other official ways to set up a GitHub repository:

1. Use the download option to get a compressed file of a codebase and uncompress it.
2. Install the GitHub Desktop tool and choose the **Open with GitHub Desktop** option on a repository.

Run a Cloned React Project

The `node_modules` directory is not a part of a cloned repository and should be downloaded using the `npm install` command to download all the direct and transitive dependencies mentioned in the `package.json` file:

```sh
# make sure that you are in the root directory of the project, use" pwd" c
cd RepoName
npm install
```

It will take some time to download all the dependencies into a `node_modules` directory, and after the download completion, run the project:

```sh
npm start
```

Tips

- A `node_modules` directory can take up more than 200MB, so it should not be a part of a repository.
- If `node_modules` is already a part of a repository then it can be removed using `git rm -r --cached node_modules` command, though make sure to commit and push the changes to the remote server first.

Conclusion

A GitHub repository can be cloned using `git` and `gh` tools. Use an SSH key to auto-authenticate. There are many free software

available to manage `git` projects. Try out the `GitHub CLI` tools to bring all the features of the GitHub UI to terminal. Happy coding!