Here's a step-by-step guide to set up a **Personal Access Token (PAT)** or **SSH key** in GitLab:

Setting Up a Personal Access Token (PAT)

1. Generate a Personal Access Token

1. Log in to your GitLab account.

2. Navigate to **User Settings**:

    - Click your profile icon in the top-right corner.

    - Select **Edit Profile**.

3. Go to **Access Tokens** (in the left sidebar).

4. Fill in the details:

    - **Name**: Provide a descriptive name (e.g., "Git access token").

    - **Scopes**:

        - Choose the necessary scopes, such as read_repository and write_repository (for cloning and pushing).

5. Click **Create personal access token**.

6. Copy the generated token and save it securely (e.g., in a password manager). You won't see it again.

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2. Use the Token in Git

When cloning a repository, replace your password with the token:

git clone https://<username>:<personal_access_token>@gitlab.com/<group>/<repo>.git

Example:

git clone https://john_doe:glpat-xxxxxxxxxxxxxxxx@gitlab.com/my-group/my-repo.git

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3. Store Token Locally (Optional)

You can cache credentials to avoid entering the token repeatedly:

git config --global credential.helper store

Then, run the clone command. Your token will be stored securely for future use.

Setting Up an SSH Key

1. Generate an SSH Key

1. Open a terminal.

2. Generate a new SSH key pair:

3. ssh-keygen -t ed25519 -C "your_email@example.com"

   - Press **Enter** to accept the default file location (e.g., ~/.ssh/id_ed25519).

   - Enter a passphrase if desired (for added security).

If ed25519 is not supported, use:

ssh-keygen -t rsa -b 4096 -C "your_email@example.com"

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2. Add the SSH Key to Your SSH Agent

1. Start the SSH agent:

2. eval "$(ssh-agent -s)"

3. Add your private key to the agent:

4. ssh-add ~/.ssh/id_ed25519

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3. Add the SSH Key to GitLab

1. Copy the public key to your clipboard:

2. cat ~/.ssh/id_ed25519.pub

3. Log in to your GitLab account.

4. Navigate to **User Settings** > **SSH Keys**.

5. Paste the public key into the **Key** field.

6. Optionally, set an expiration date for the key.

7. Click **Add key**.

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4. Test Your SSH Connection

Run the following command to verify the connection:

ssh -T git@gitlab.com

You should see a message like:

Welcome to GitLab, @username!

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5. Clone Repository Using SSH

Use the SSH URL instead of HTTPS:

git clone git@gitlab.com:<group>/<repo>.git