PostgreSQL pg_basebackup and Restore (Step-by-Step)

Part 1 — Taking Backup with pg_basebackup

1. Create a Replication User (on Primary DB):

```
CREATE ROLE repl WITH REPLICATION LOGIN PASSWORD
'StrongPassword';
```

2. Allow Replication User in pg_hba.conf (on Primary DB):

```
host    replication    repl    <backup_server_ip>/32    md5
```

Reload PostgreSQL: pg_ctl reload OR SELECT pg_reload_conf();

3. Check Tablespace Locations:

```
SELECT spcname, pg_tablespace_location(oid) FROM pg_tablespace;
```

4. Take Backup with Tablespace Mapping:

```
pg_basebackup -h 10.83.40.101 -p 5432 -U repl -D
/mnt/backup/pg_data --wal-method=stream --progress --
tablespace-
mapping=/var/lib/pgsql/fastdata=/mnt/backup/fastdata --
tablespace-mapping=/mnt/slowstorage=/mnt/backup/slowdata
```

Part 2 — Restoring pg_basebackup

1. Stop PostgreSQL: sudo systemctl stop postgresql OR pg_ctl stop -D $PGDATA

2. Clear Current Data Directory: rm -rf $PGDATA/*

3. Restore Main Data Directory: cp -rp /mnt/backup/pg_data/* $PGDATA/

4. Restore Tablespaces:

```
If restoring to the same paths:
cp -rp /mnt/backup/fastdata /var/lib/pgsql/fastdata
cp -rp /mnt/backup/slowdata /mnt/slowstorage

If restoring to new paths:
CREATE TABLESPACE ts_fastdata LOCATION '/new/path/fastdata';
CREATE TABLESPACE ts_slowdata LOCATION '/new/path/slowdata';
```

```
cp -rp /mnt/backup/fastdata/* /new/path/fastdata/
cp -rp /mnt/backup/slowdata/* /new/path/slowdata/
```

5. Fix Permissions:

```
chown -R postgres:postgres $PGDATA
chown -R postgres:postgres /var/lib/pgsql/fastdata
chown -R postgres:postgres /mnt/slowstorage
```

6. Start PostgreSQL: sudo systemctl start postgresql OR pg_ctl start -D $PGDATA

7. Verify Tablespaces:

```
SELECT spcname, pg_tablespace_location(oid) FROM pg_tablespace;
```