

Arcgis Tutorials

Geodatabase



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Geodatabase In ArcGIS

The geodatabase is a collection of geographic datasets of various types.

In this topic, The geodatabase is a "container" used to hold a collection of datasets.

you can learn about the fundamentals of the geodatabase. These concepts will help provide a foundation for learning about and effectively using geodatabases for your GIS work.

Fundamental datasets in the geodatabase

A key geodatabase concept is the dataset. It is the primary mechanism used to organize and use geographic information in ArcGIS. The geodatabase contains three primary dataset types:

- Feature classes
- Raster datasets
- Tables

Creating a collection of these dataset types is the first step in designing and building a geodatabase. Users typically start by building a number of these fundamental dataset types. Then they add to or extend their geodatabases with more advanced capabilities (such as by adding topologies, networks, or subtypes) to model GIS behavior, maintain data integrity, and work with an important set of spatial relationships.

Types of Geodatabases

. There are three types:

1. File Geodatabases: (.gdb)

Stored as folders in a file system. Each dataset is held as a file that can scale up to 1 TB in size. The file geodatabase is recommended over personal geodatabases.

2. Personal Geodatabases (.mdb)

All datasets are stored within a Microsoft Access data file, which is limited in size to 2 GB.

3. ArcSDE Geodatabases:(Spatial Database Engine)

Stored in a relational database using Oracle, Microsoft SQL Server, IBM DB2, IBM Informix, or PostgreSQL. These multiuser geodatabases require the use of ArcSDE and can be unlimited in size and numbers of users.

Comparing the three types of geodatabases

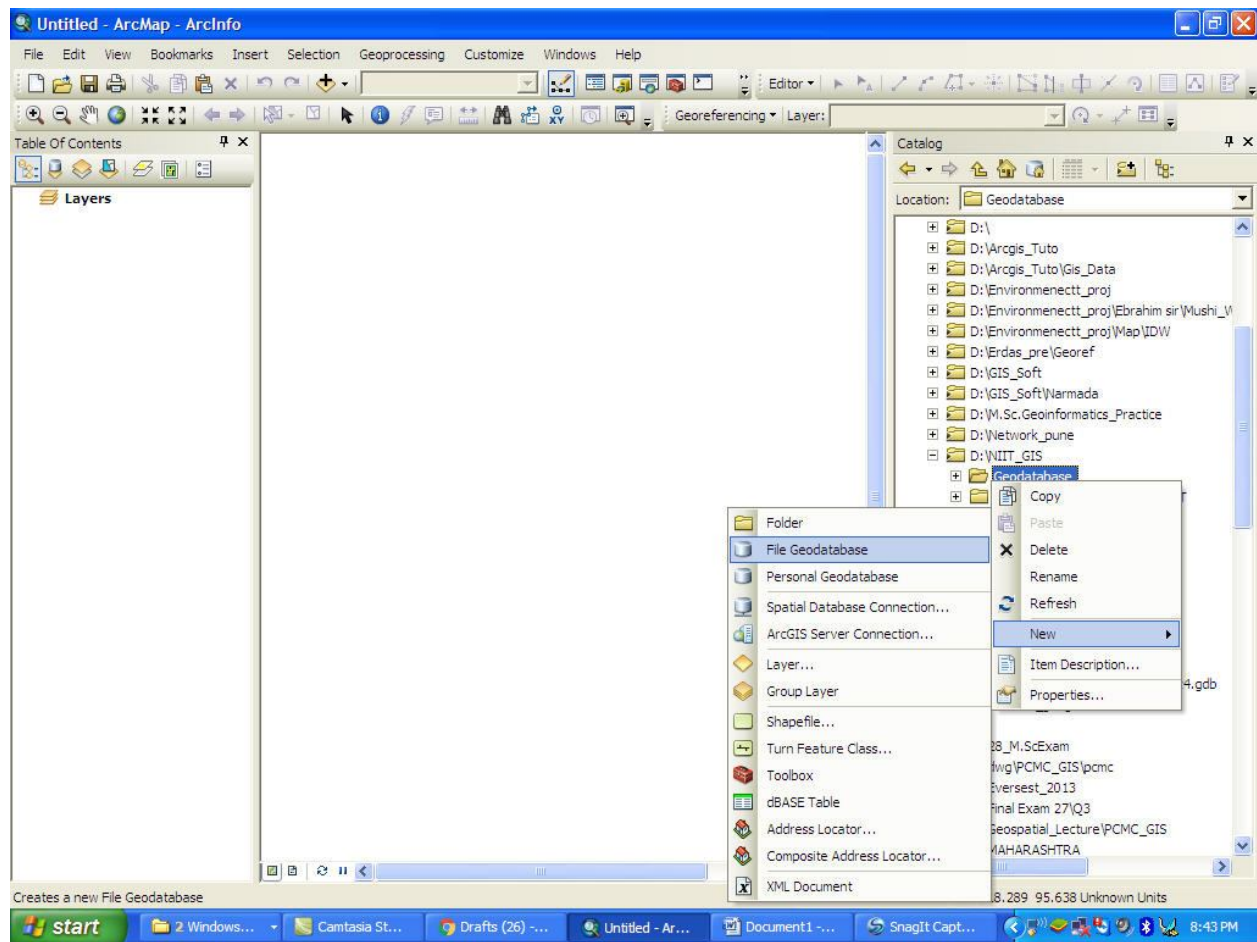
Key characteristics	ArcSDE geodatabase	File geodatabase	Personal geodatabase
Description	A collection of various types of GIS datasets held as tables in a relational database (This is the recommended native data format for ArcGIS stored and managed in	A collection of various types of GIS datasets held in a file system folder.(This is the recommended native data format for ArcGIS stored and managed in a file system folder.)	Original data format for ArcGIS geodatabases stored and managed in Microsoft Access data files.(This is limited in size and tied to the

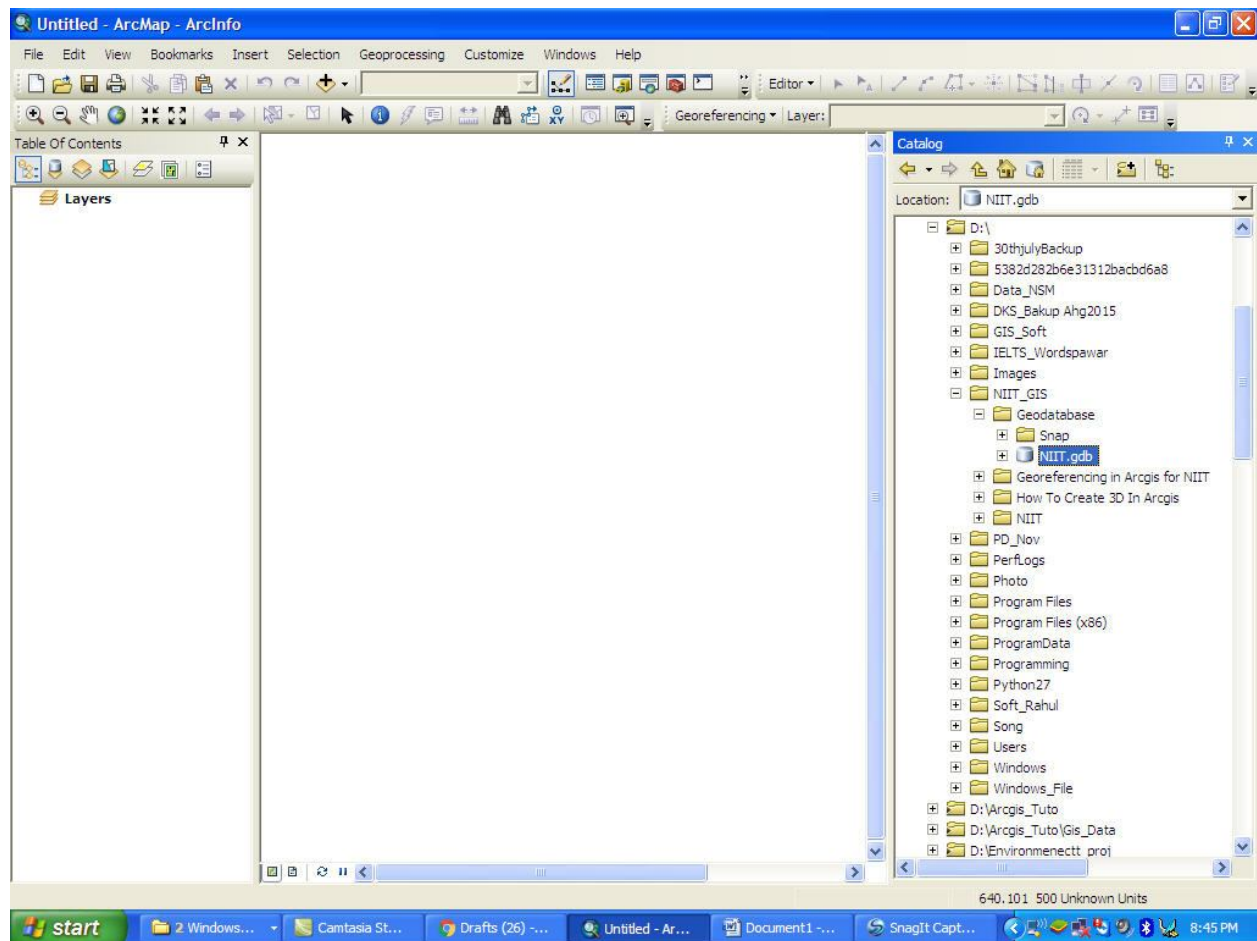
	a relational database.)		Windows operating system.)
Number of users	Multiuser: many readers and many writers	Single user and small workgroups: many readers or one writer per feature dataset, stand-alone feature class, or table. Concurrent use of any specific file eventually degrades for large numbers of readers.	Single user and small workgroups with smaller datasets: some readers and one writer. Concurrent use eventually degrades for large numbers of readers.
Storage format	• Oracle • Microsoft SQL Server • IBM DB2 • IBM Informix • PostgreSQL	Each dataset is a separate file on disk. A file geodatabase is a file folder that holds its dataset files.	All the contents in each personal geodatabase are held in a single Microsoft Access file (.mdb).
Size limits	Up to DBMS limits	One TB for each dataset. Each file geodatabase can hold many datasets. The 1 TB limit can be raised to 256 TB for extremely large image datasets. Each feature class can scale up to hundreds of millions of vector features per dataset.	Two GB per Access database. The effective limit before performance degrades is typically between 250 and 500 MB per Access database file.
Versioning support	Fully supported across all DBMSs; includes cross-database replication, updates using checkout and	Only supported as a geodatabase for clients who post updates using checkout and check-in and as a client to which	Only supported as a geodatabase for clients who post updates using checkout and

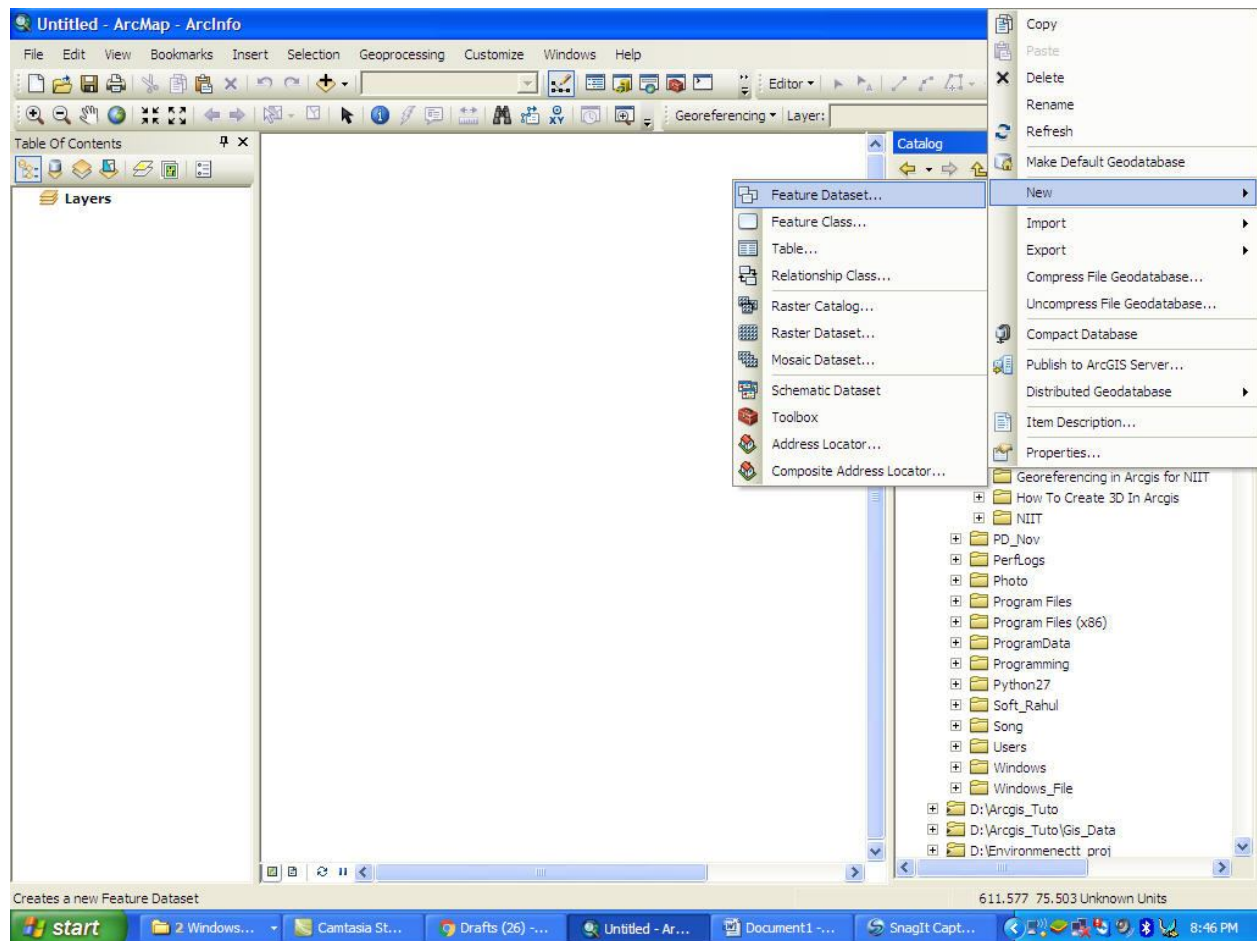
	check-in, and historical archiving	updates can be sent using one-way replication.	check-in and as a client to which updates can be sent using one-way replication.
Platforms	Windows, UNIX, Linux, and direct connections to DBMSs that can potentially run on any platform on the user's local network	Cross-platform.	Windows only.
Security and permissions	Provided by DBMS	Operating file system security.	Windows file system security.
Database administration tools	Full DBMS functions for backup, recovery, replication, SQL support, security, and so on	File system management.	Windows file system management.
Notes	Requires the use of ArcSDE technology; ArcSDE for SQL Server Express included with • ArcEditor and ArcInfo • ArcGIS Engine • ArcGIS Server Workgroup ArcSDE for all other DBMSs included with ArcGIS Server Enterprise	You can optionally store data in a read-only compressed format to reduce storage requirements.	Often used as an attribute table manager (via Microsoft Access). Users like the string handling for text attributes.

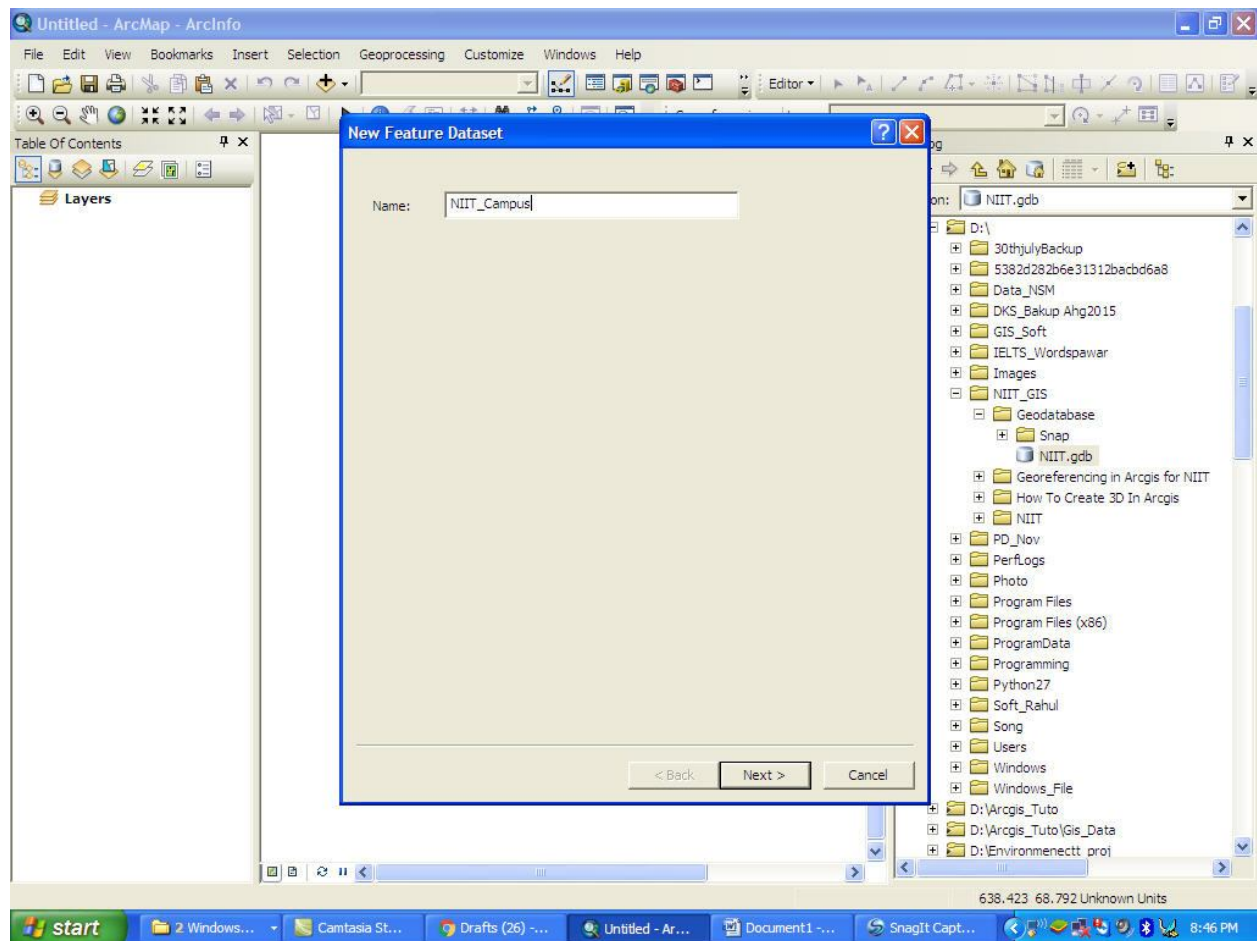
How to Create Geodatabases in Arcmap

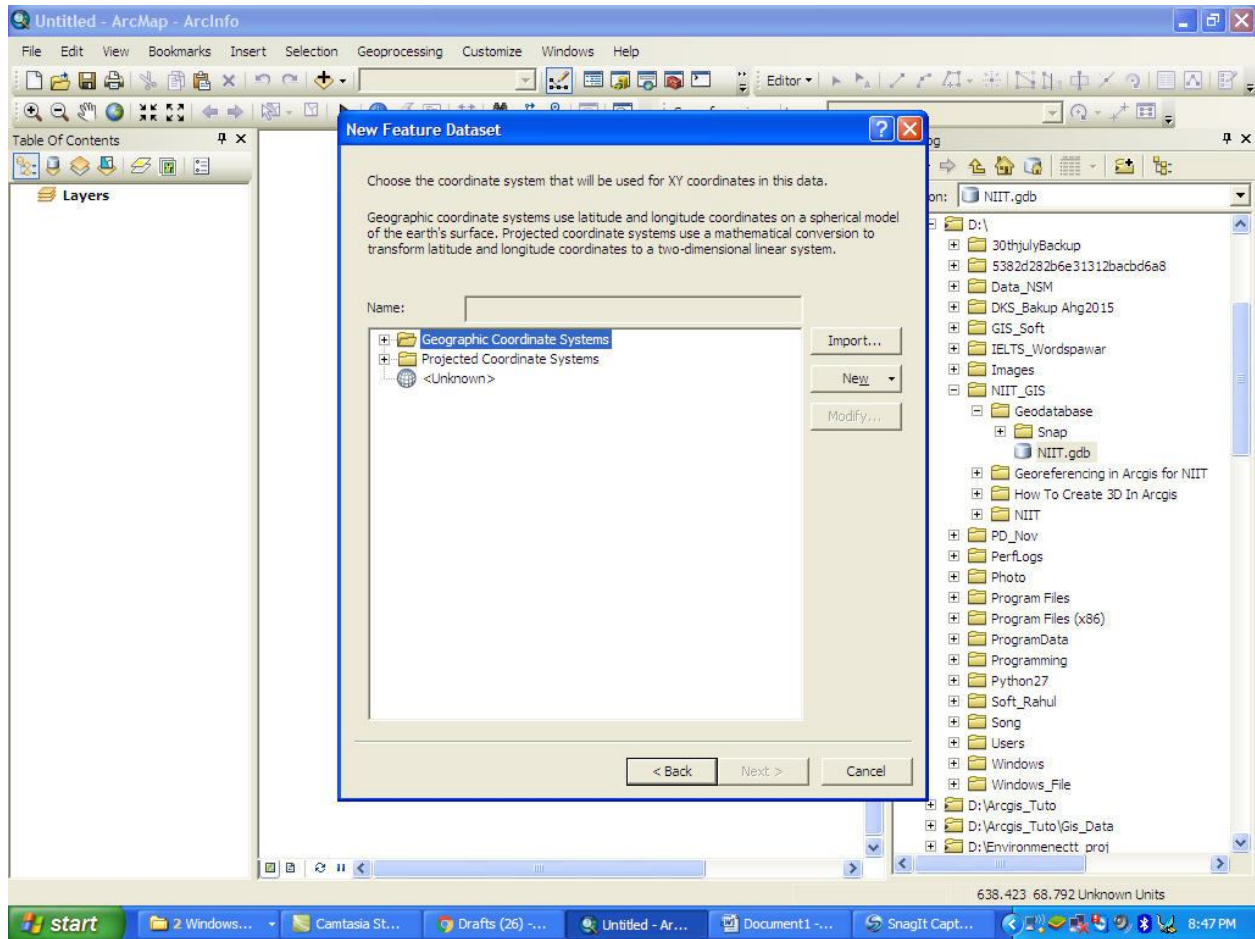
1.File Geodatabases: (.gdb)

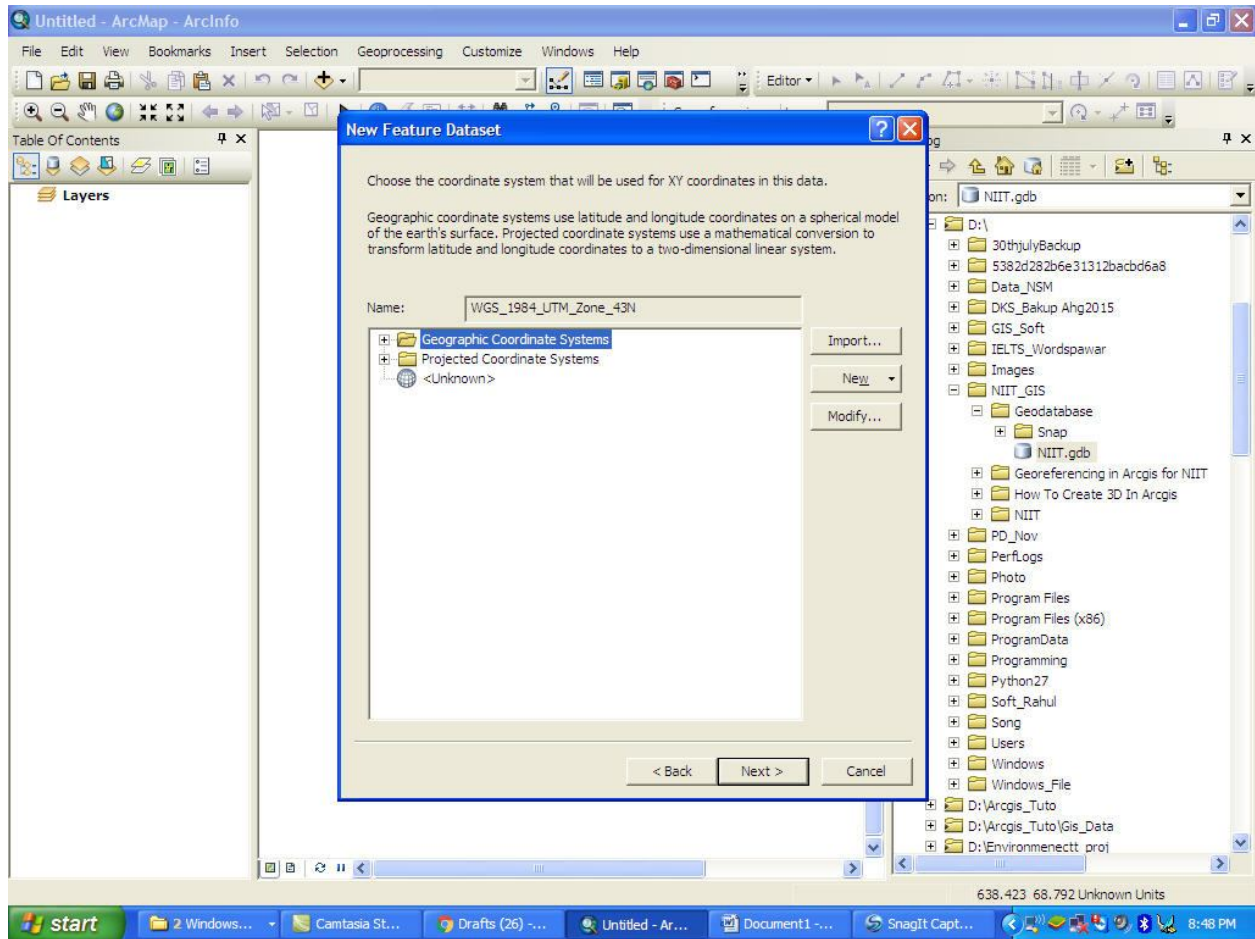


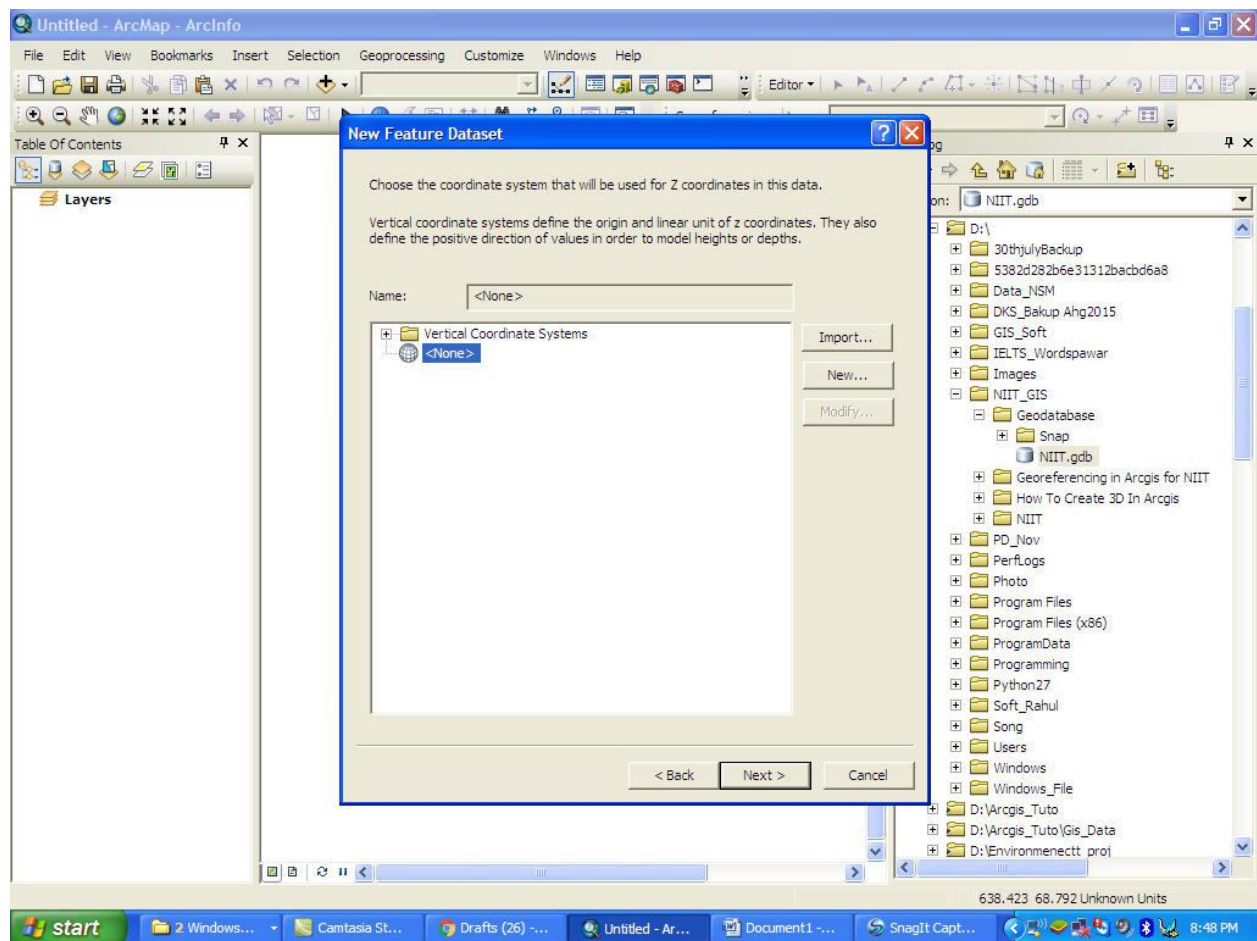


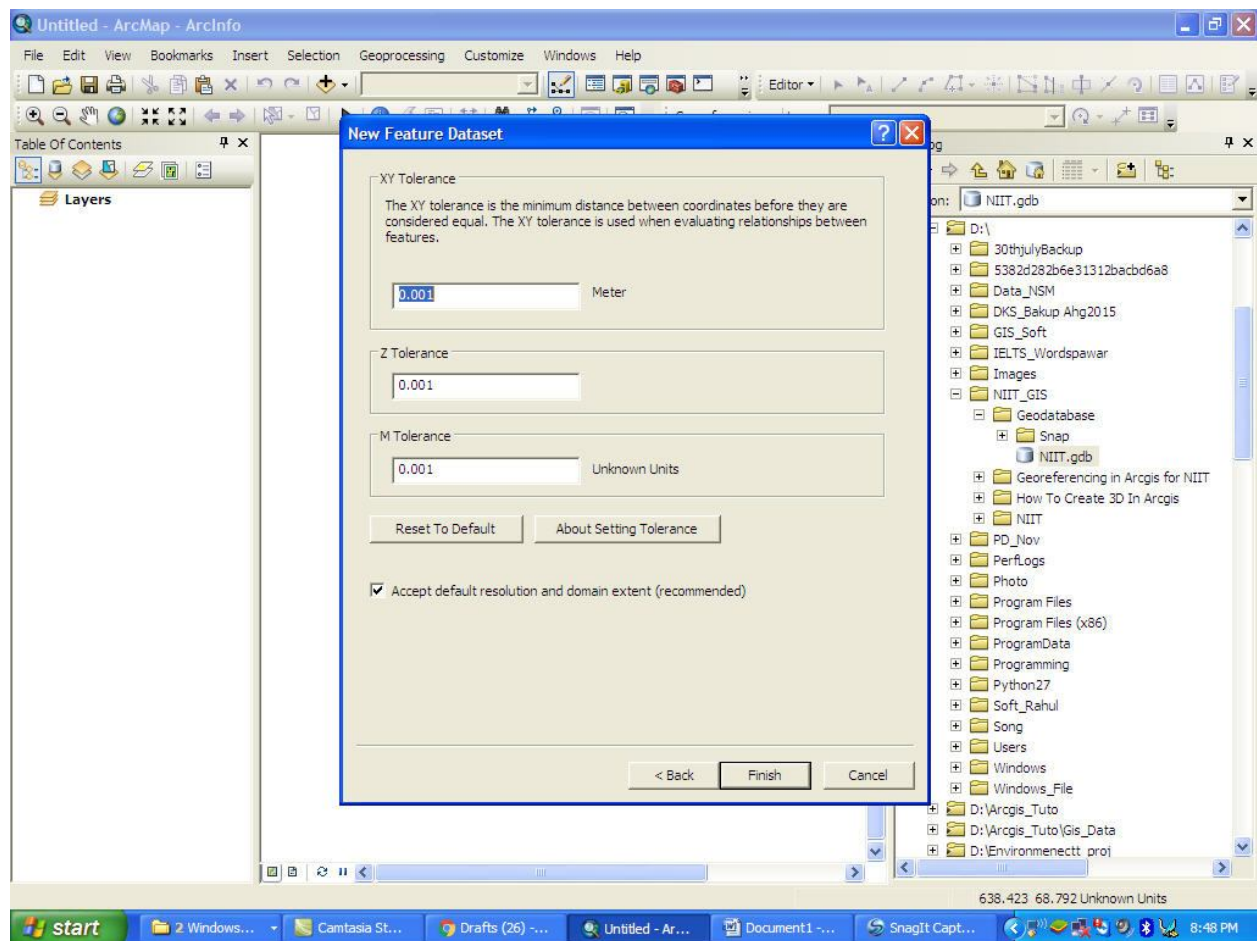


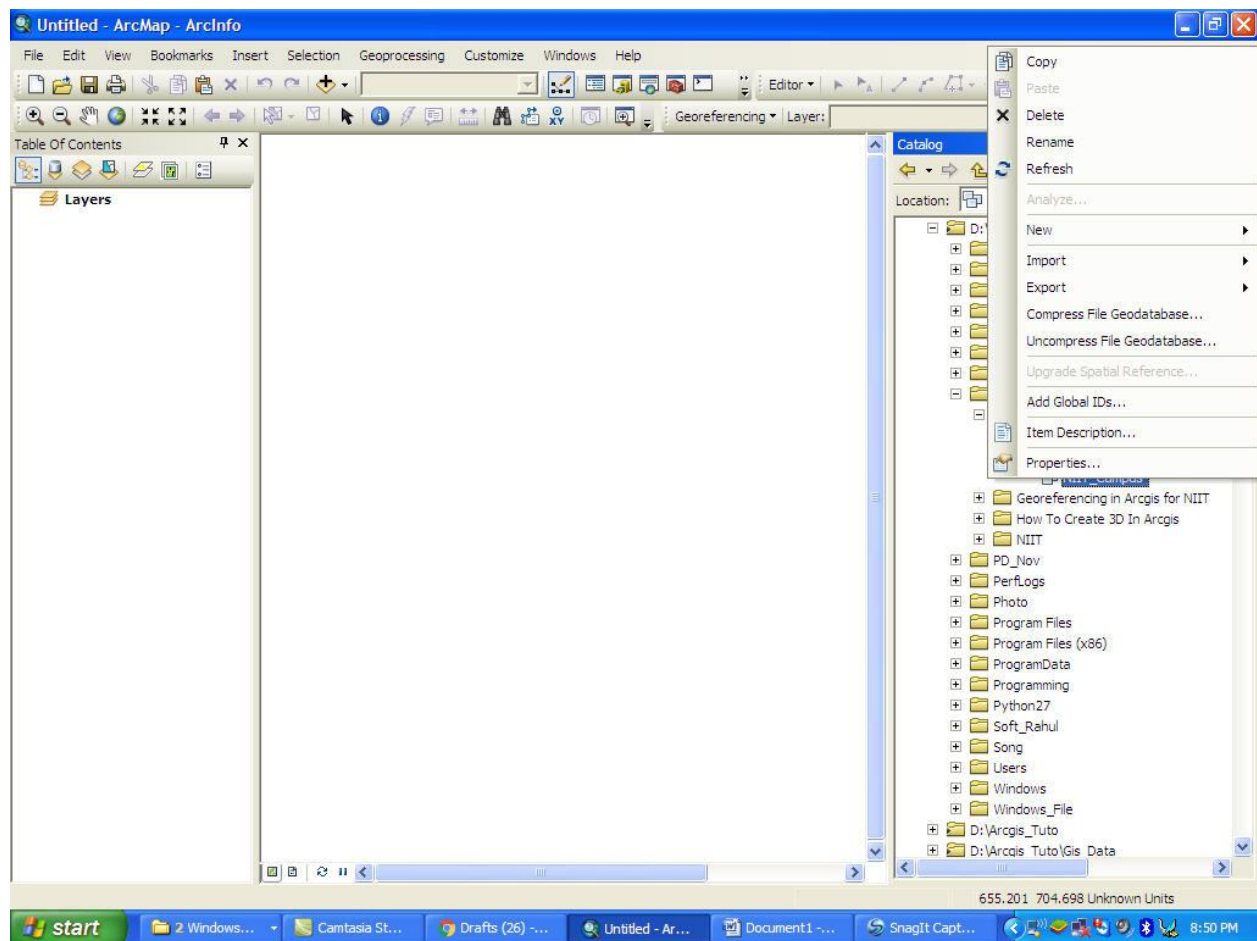


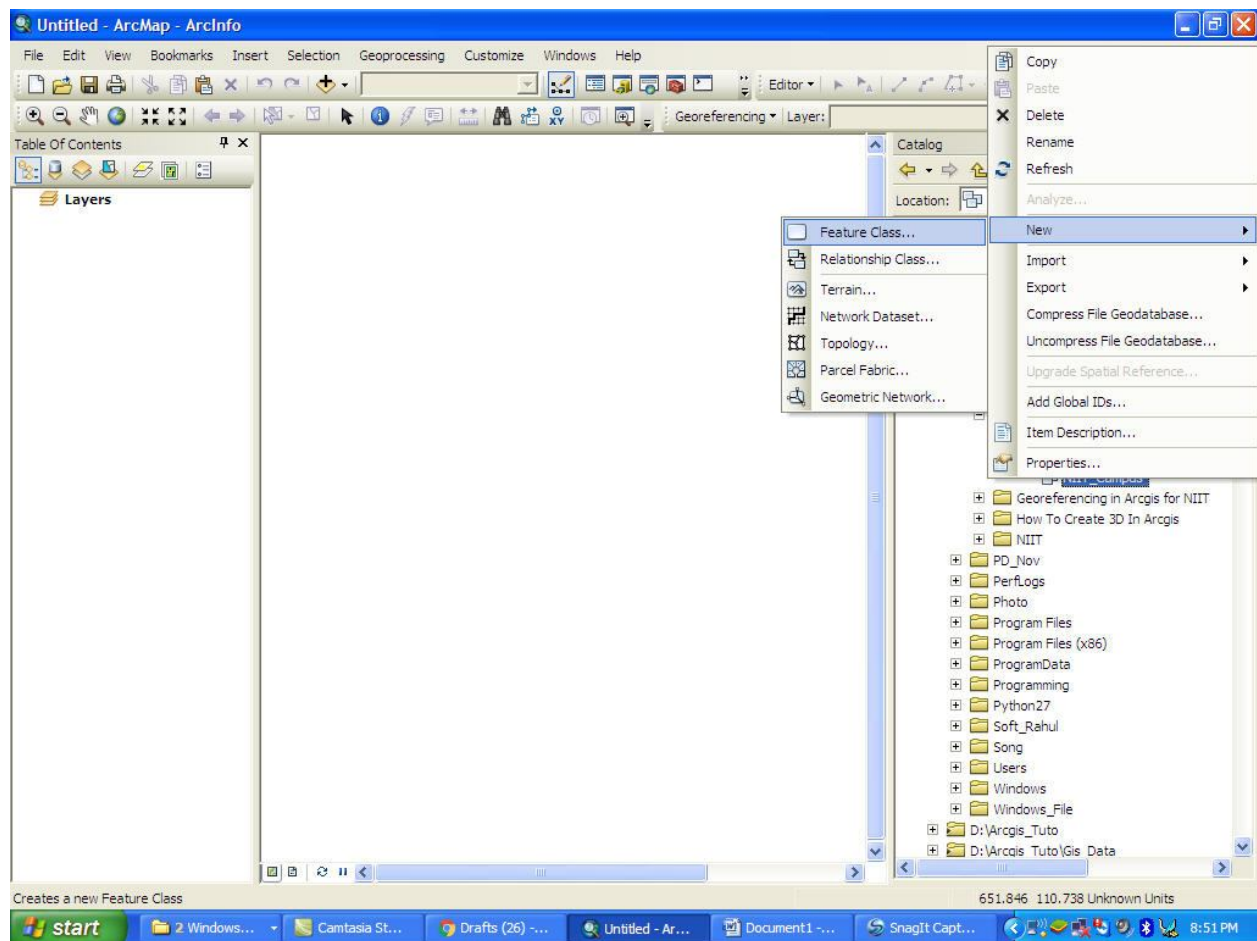


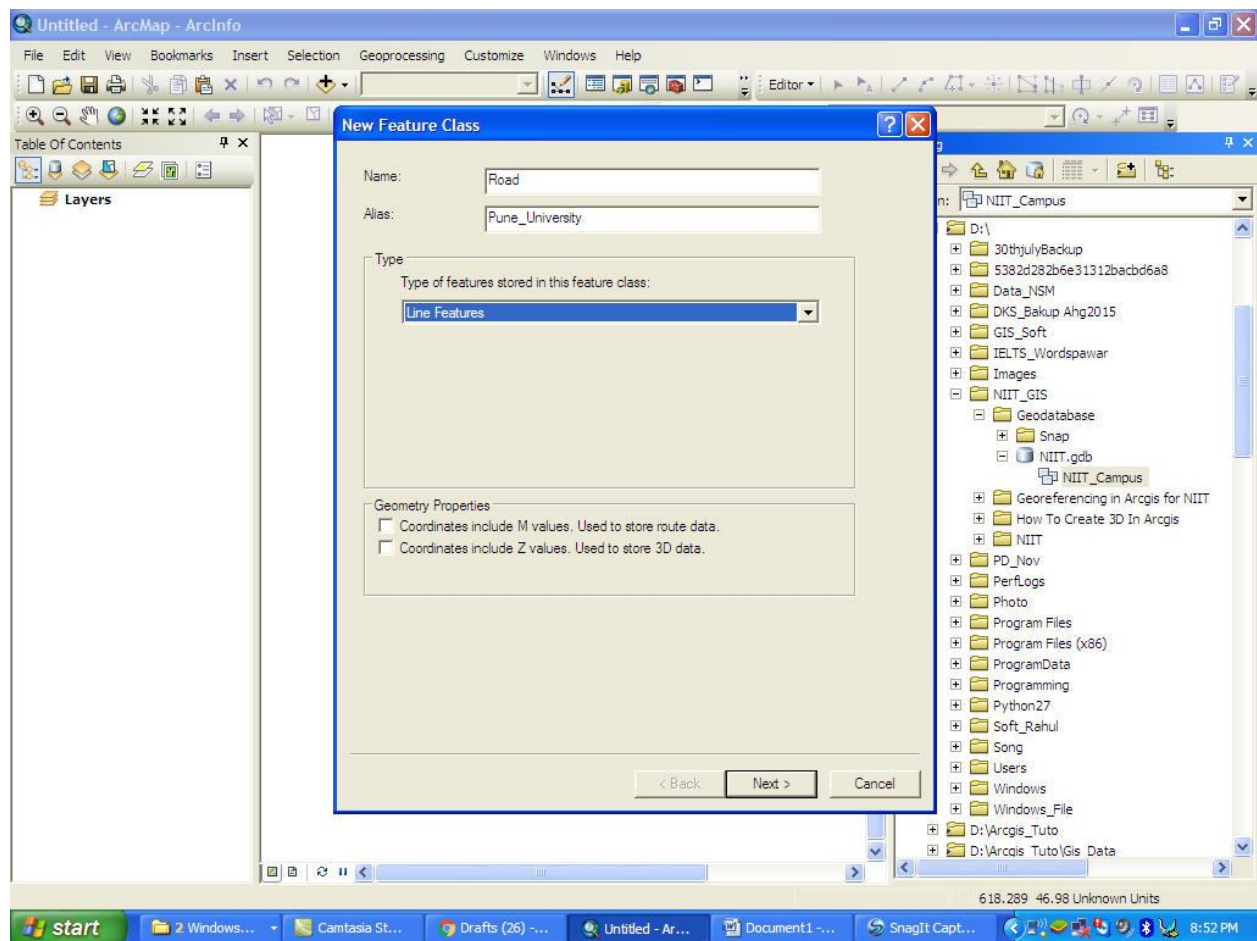


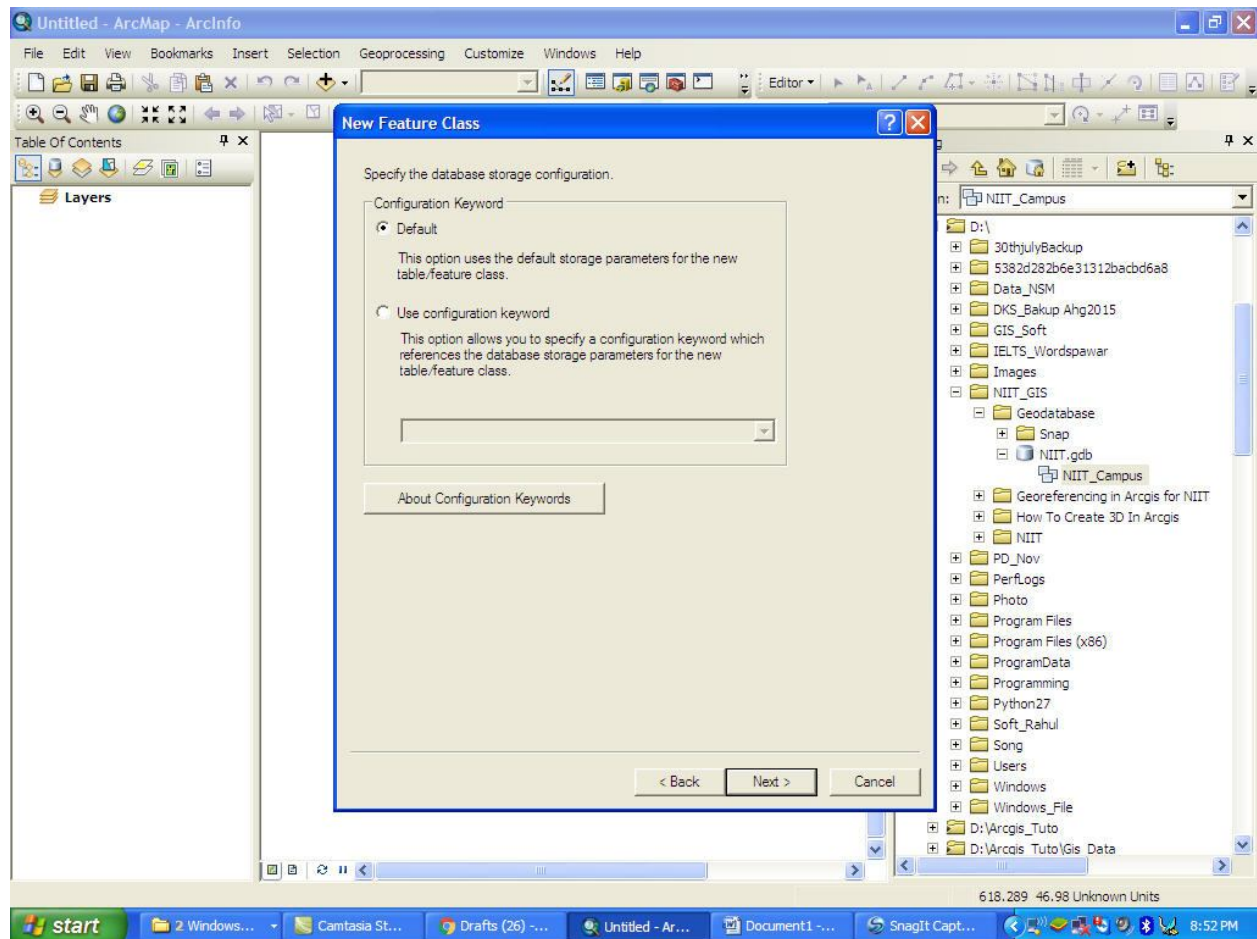


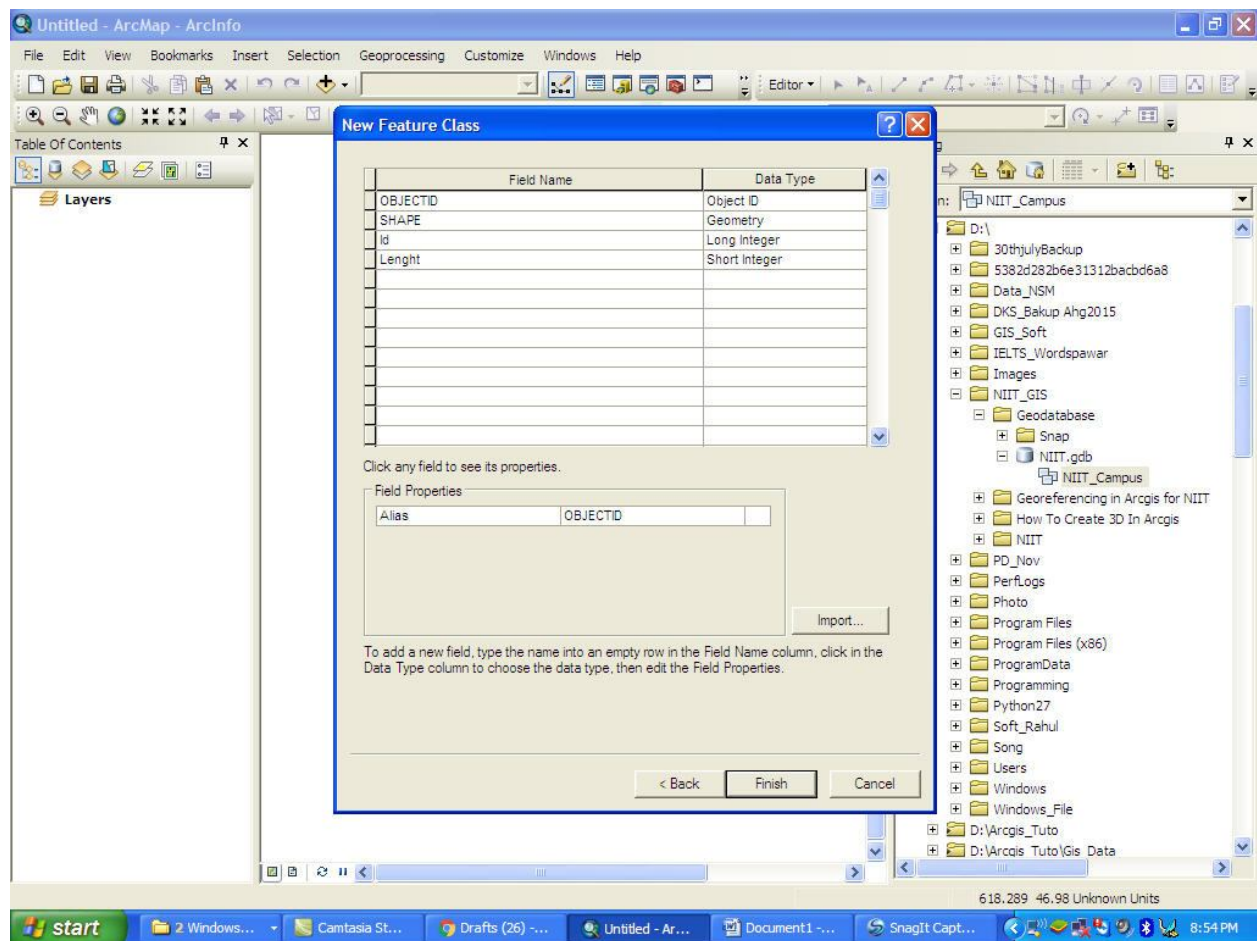


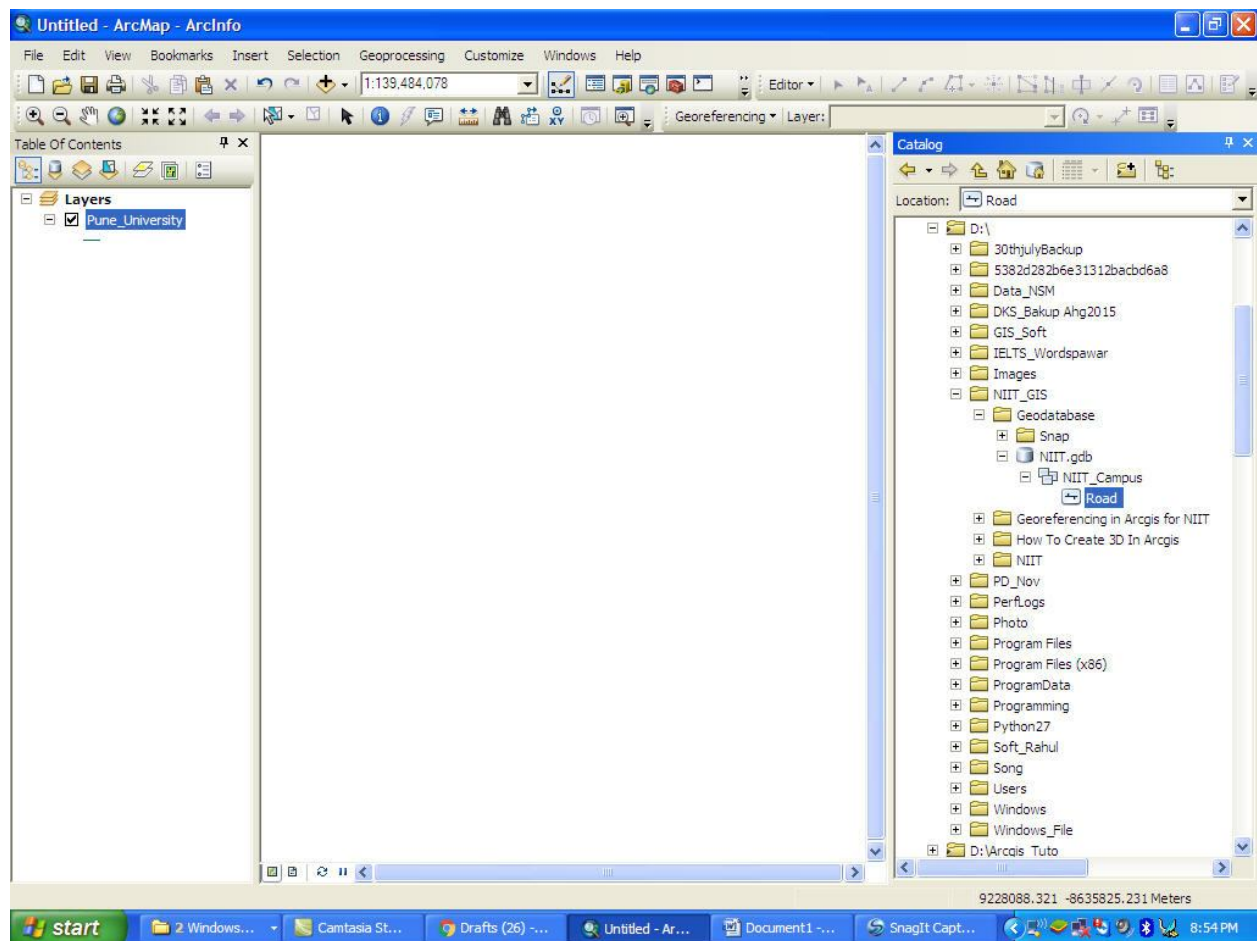




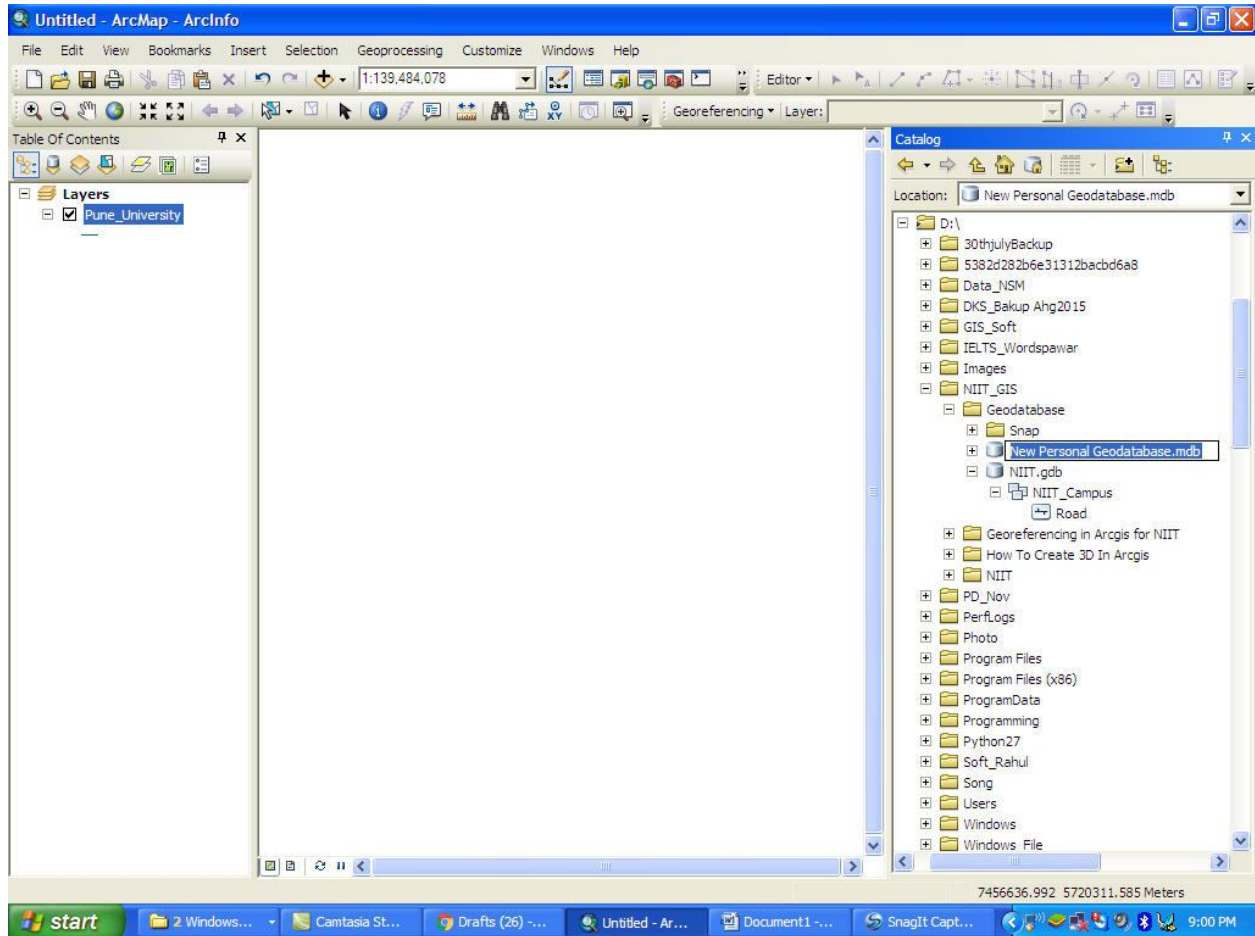


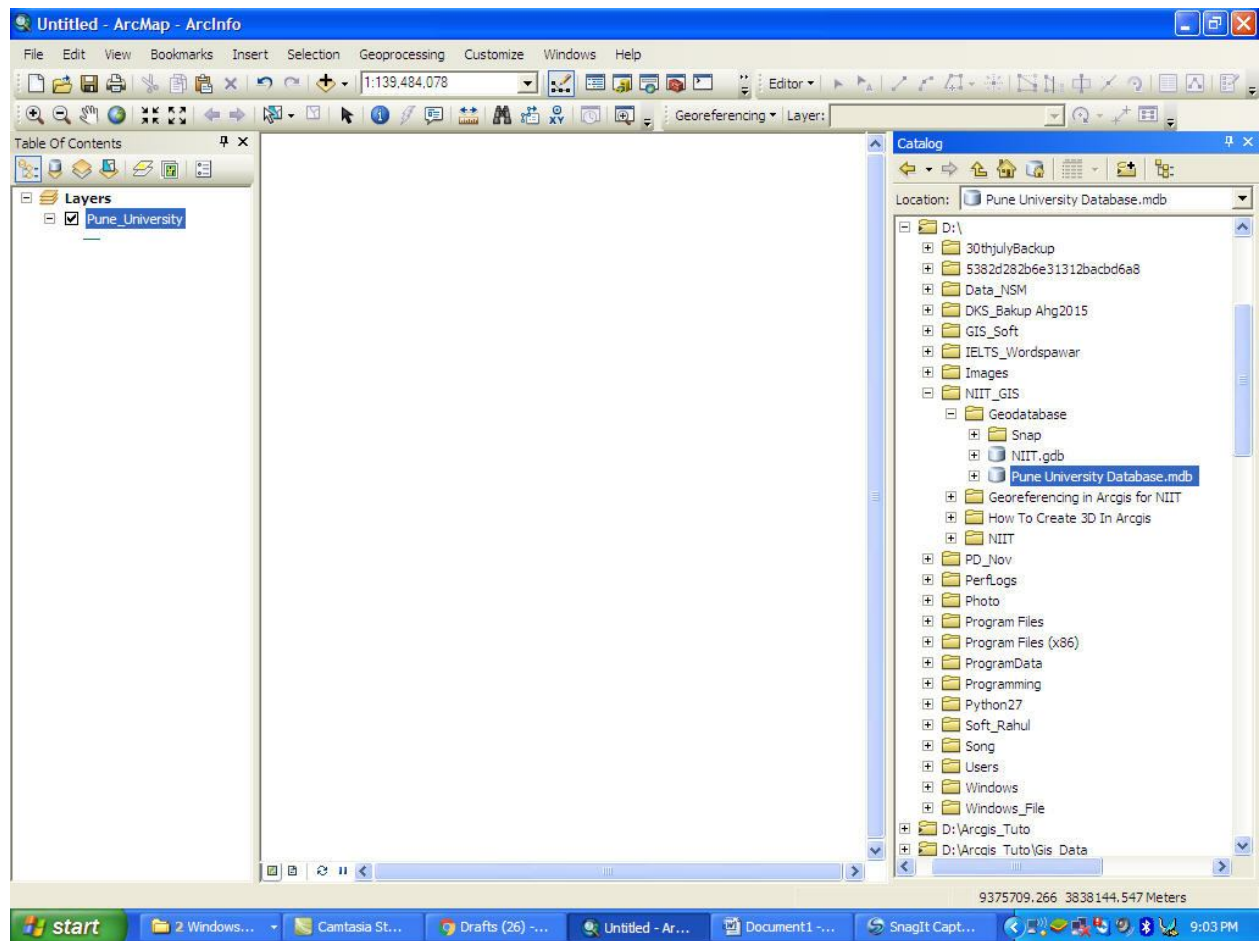


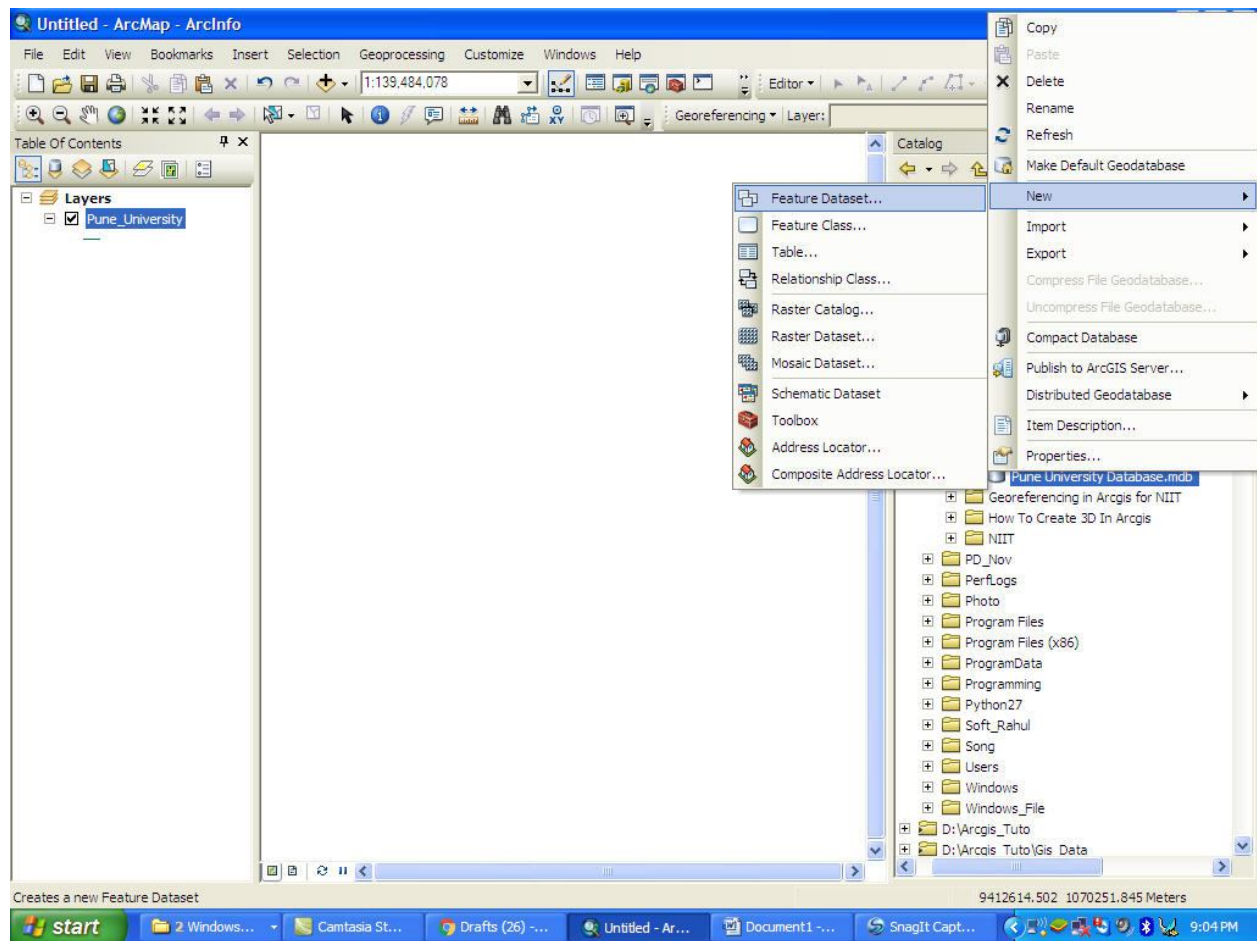


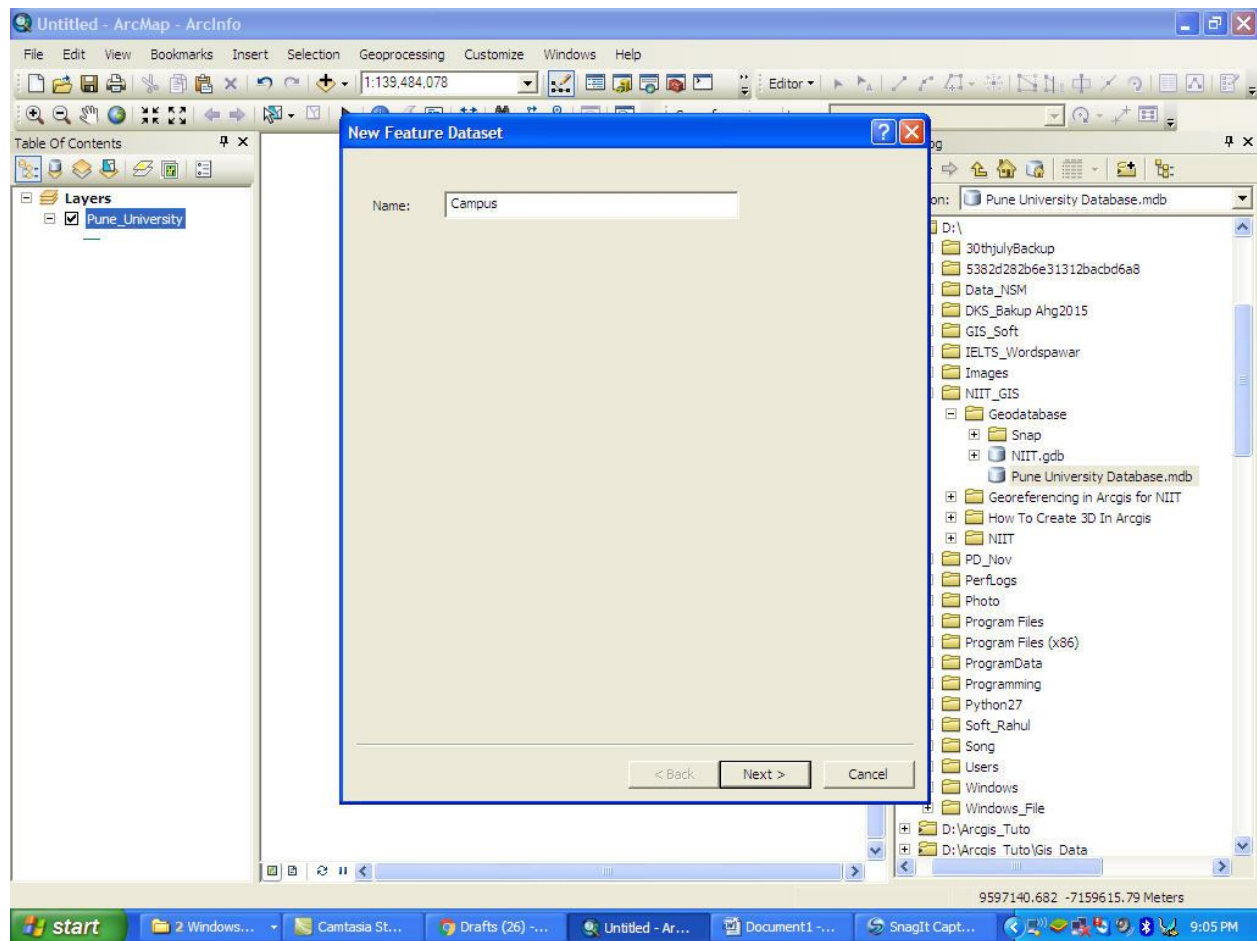


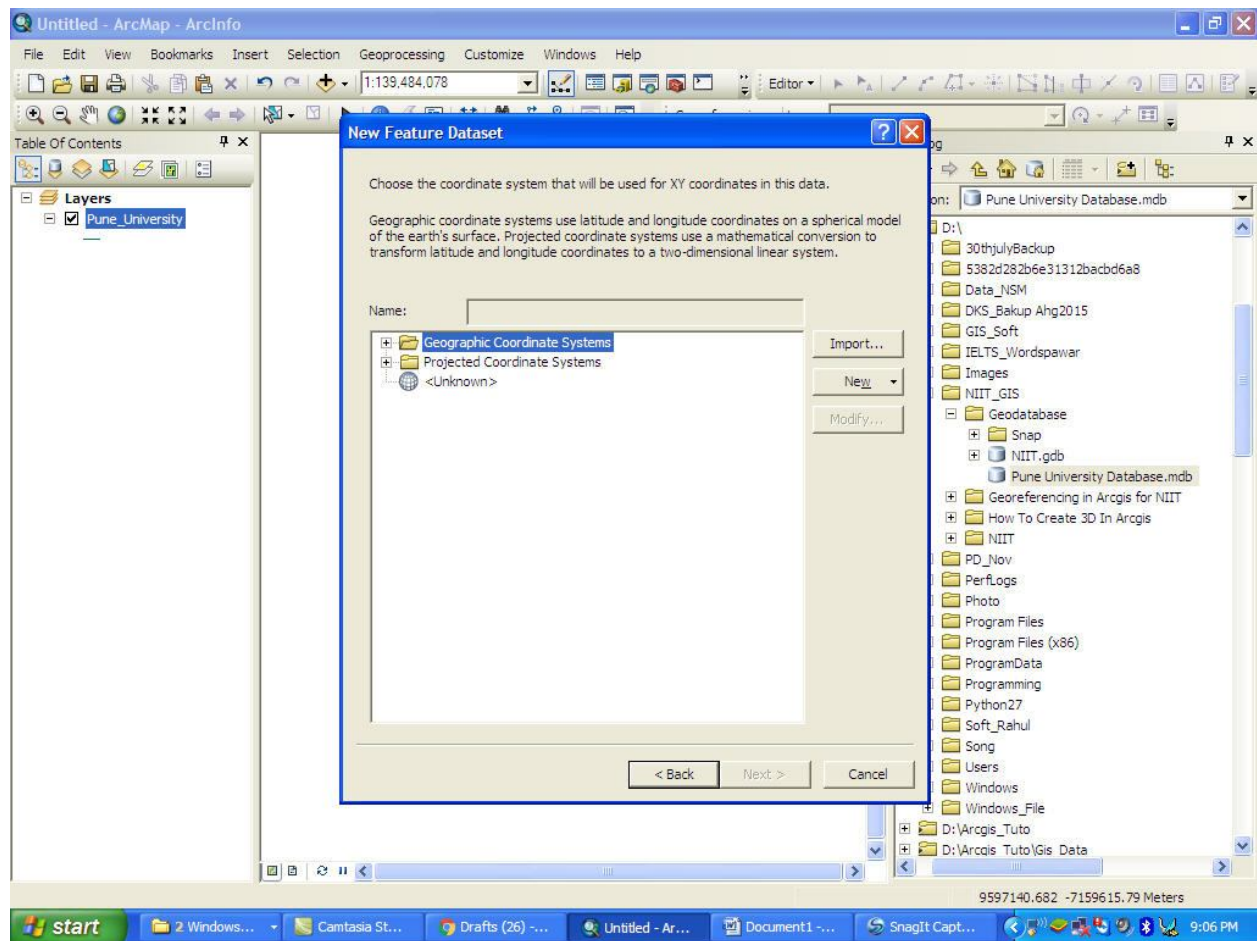
2) Personal Geodatabases (.mdb)

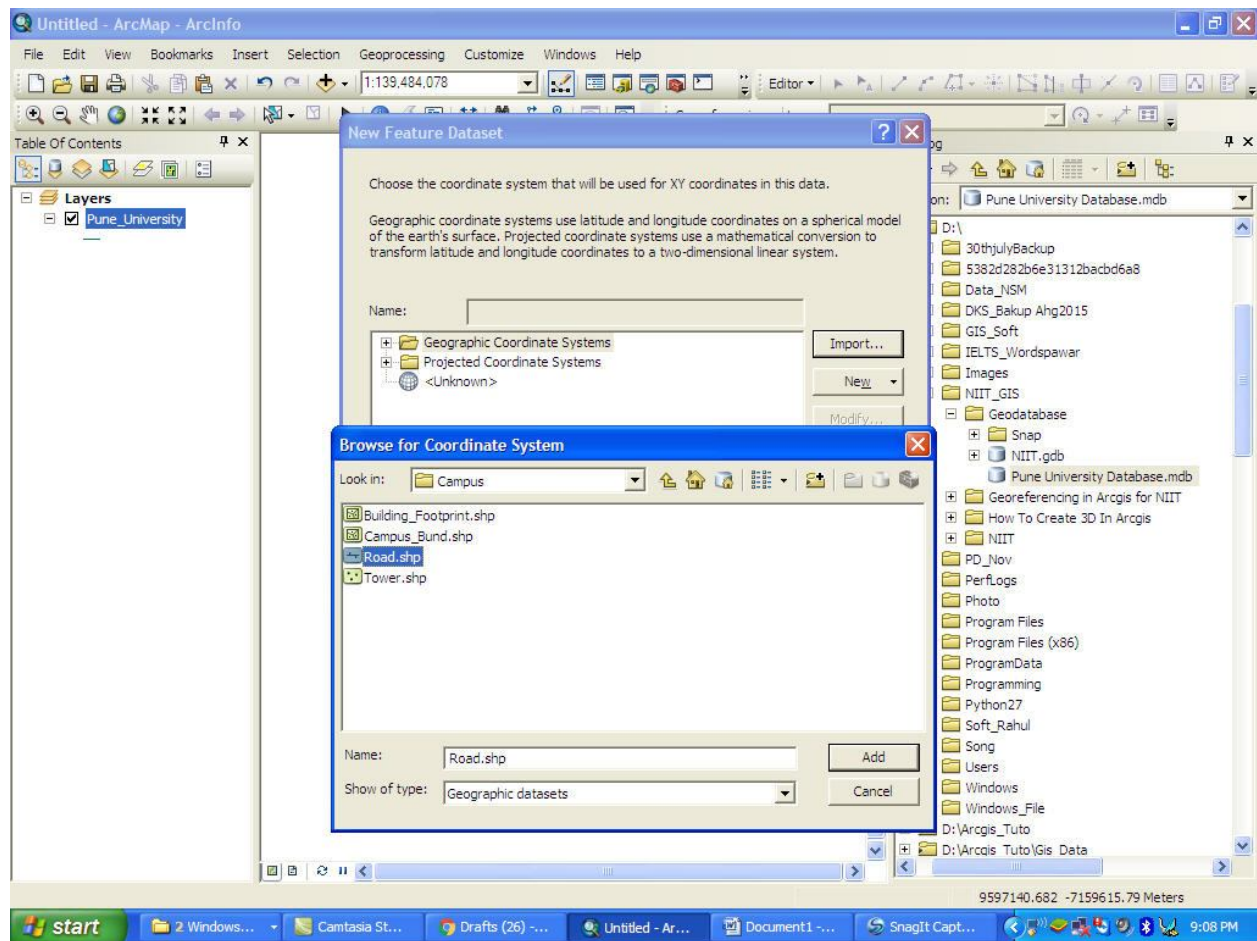


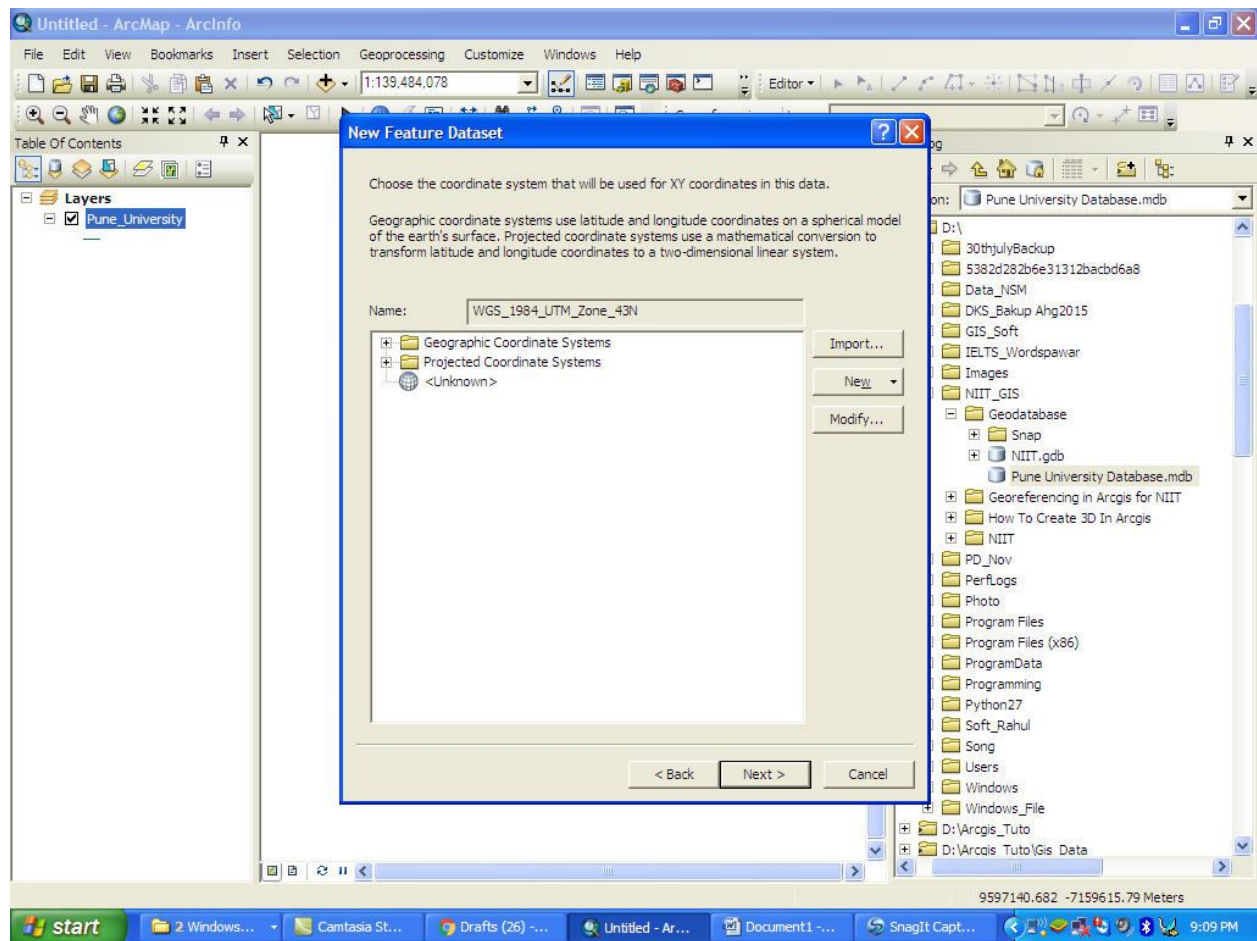


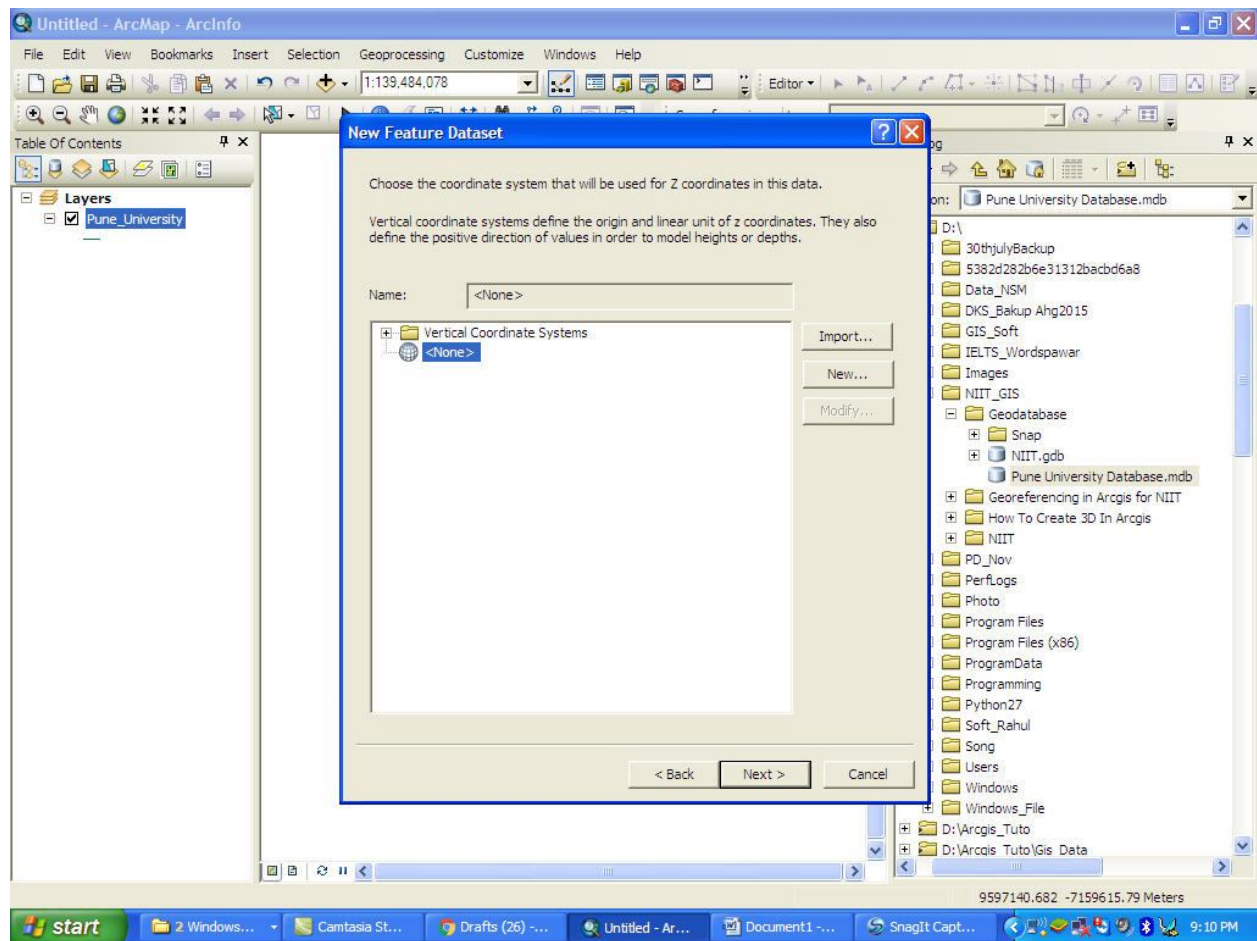


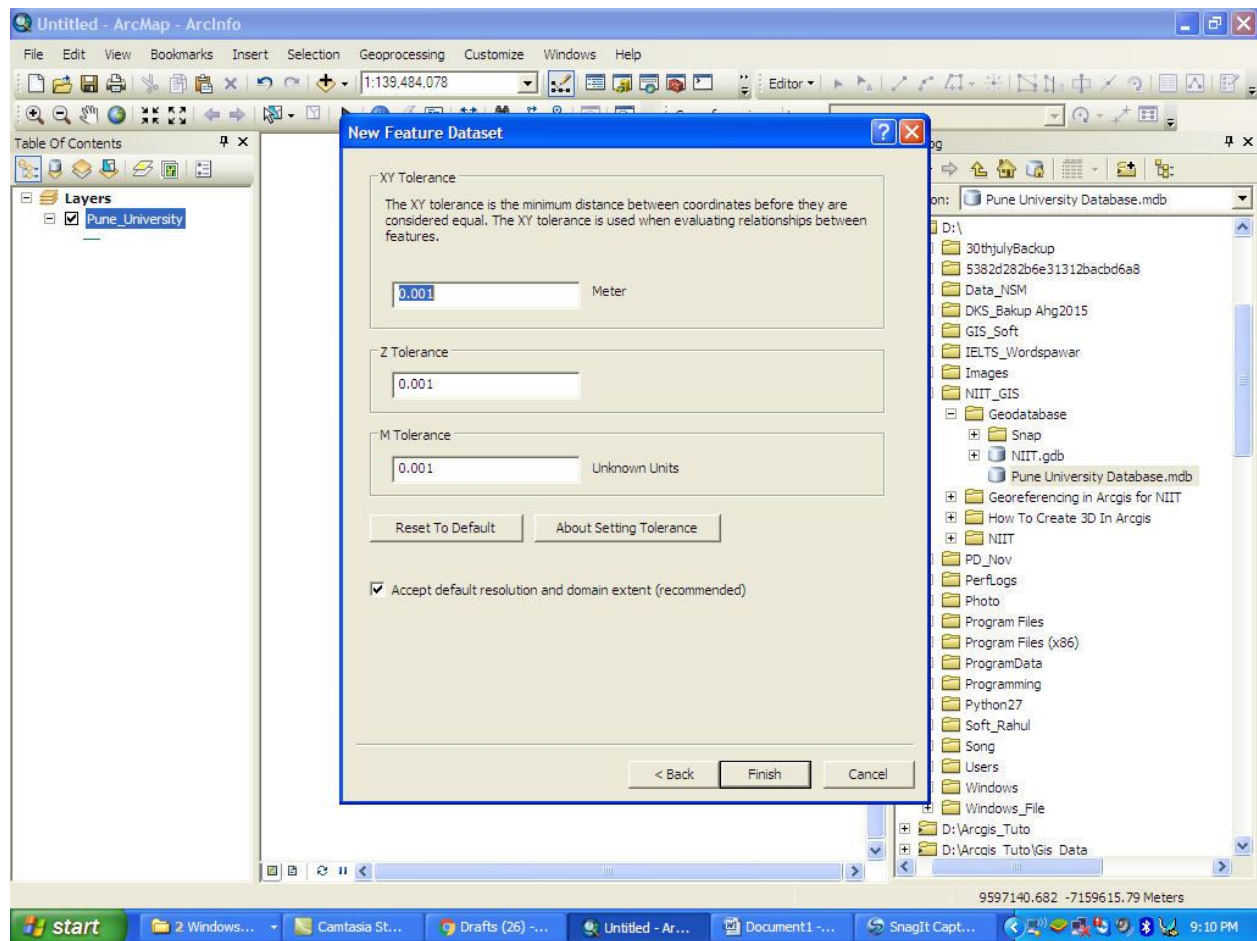


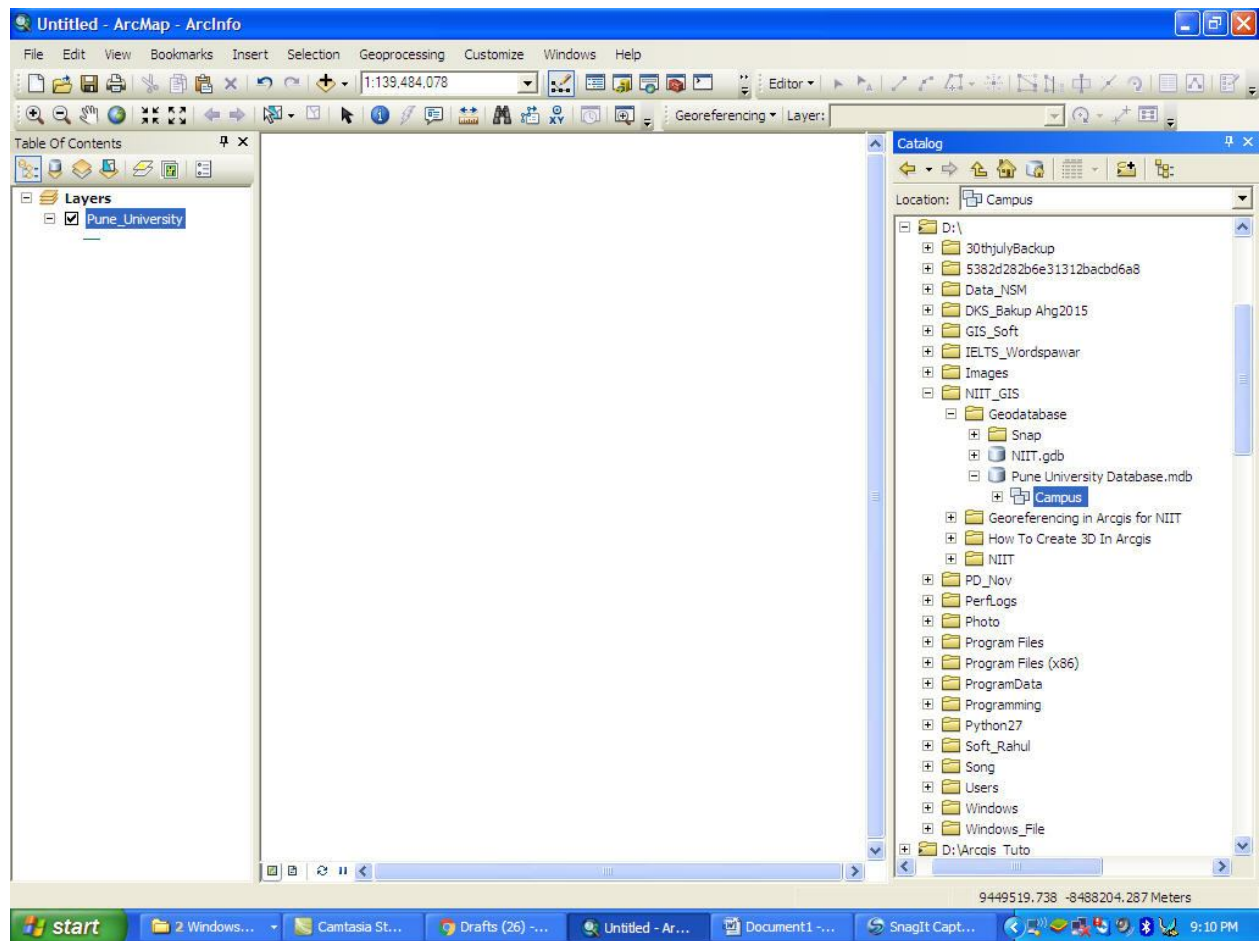


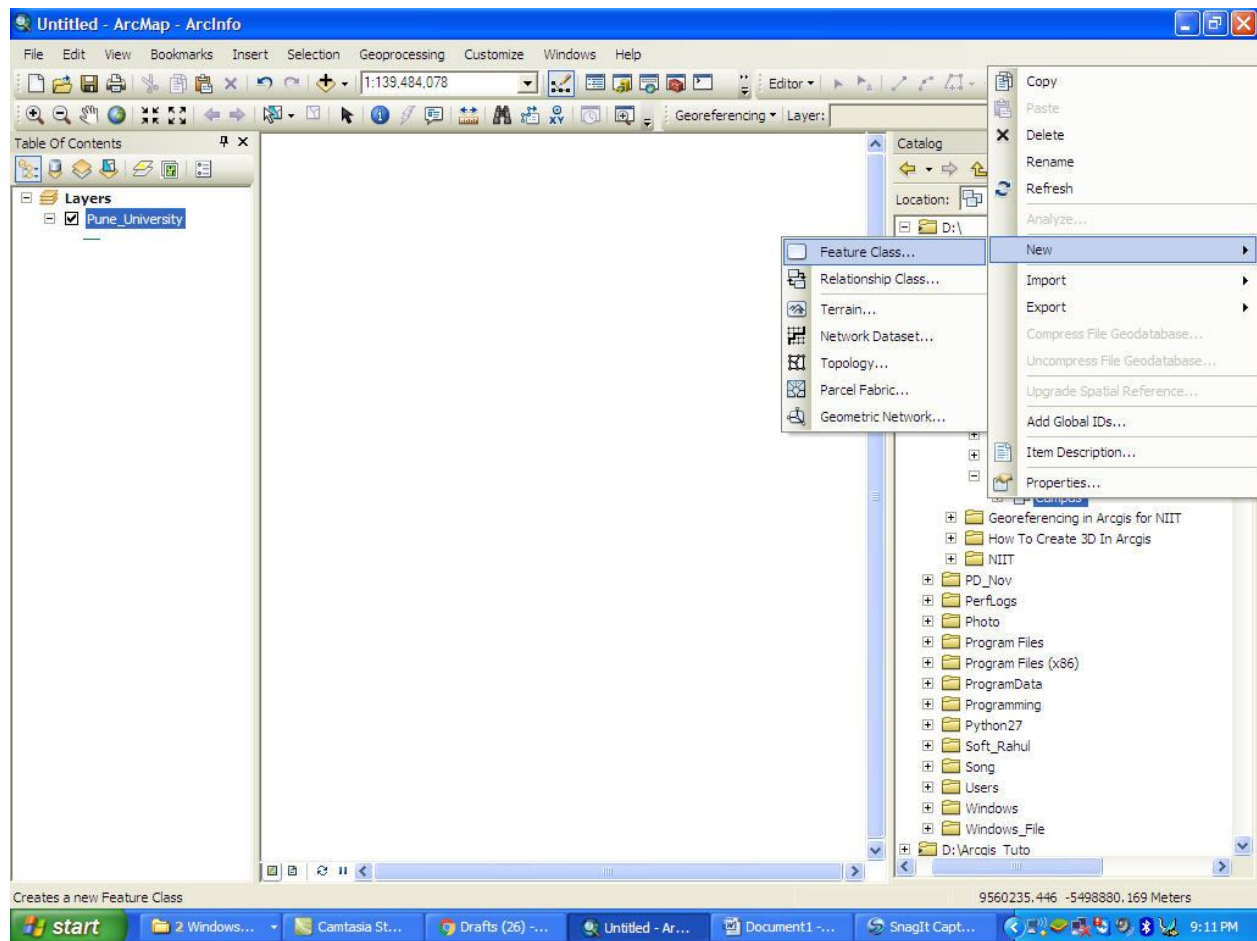


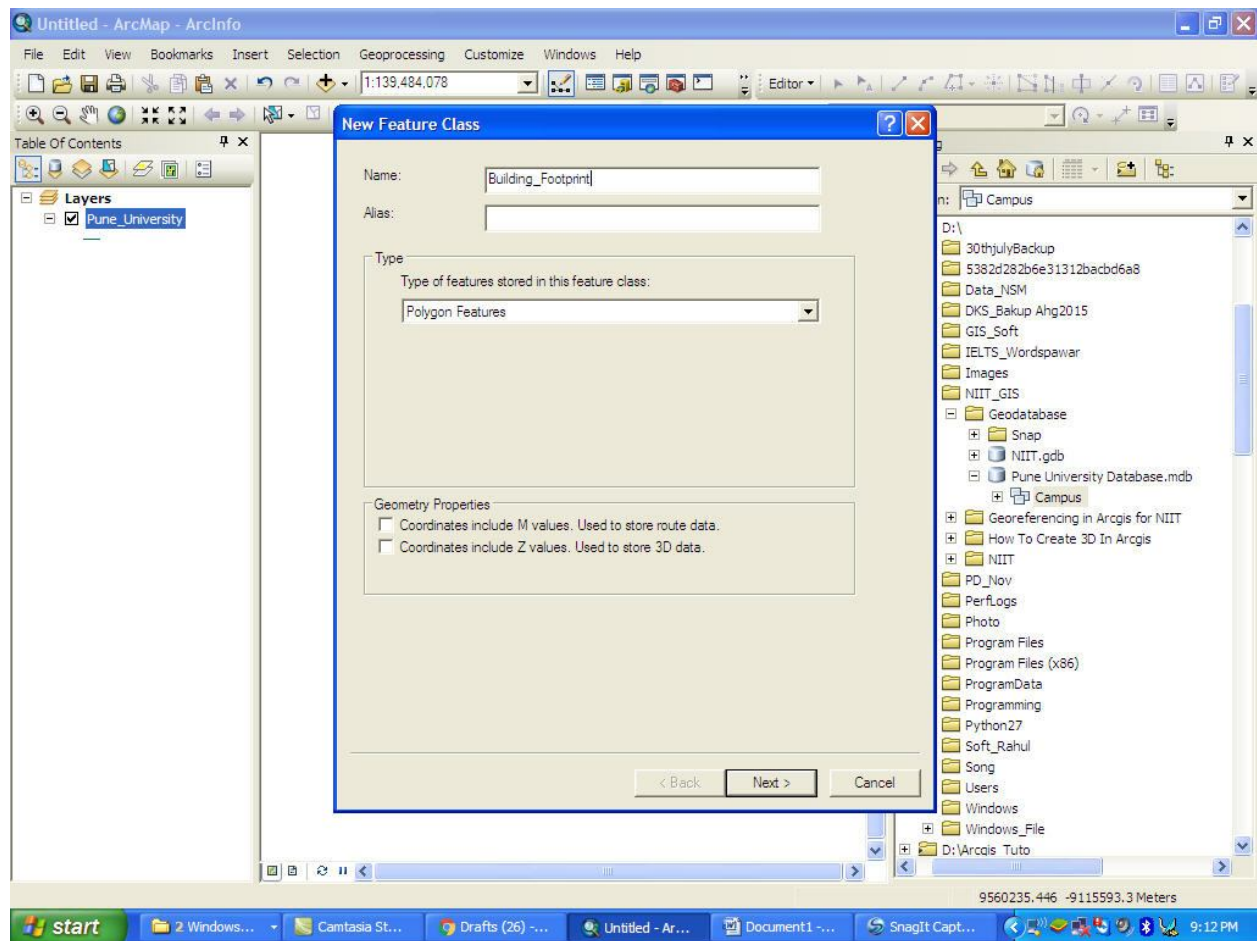


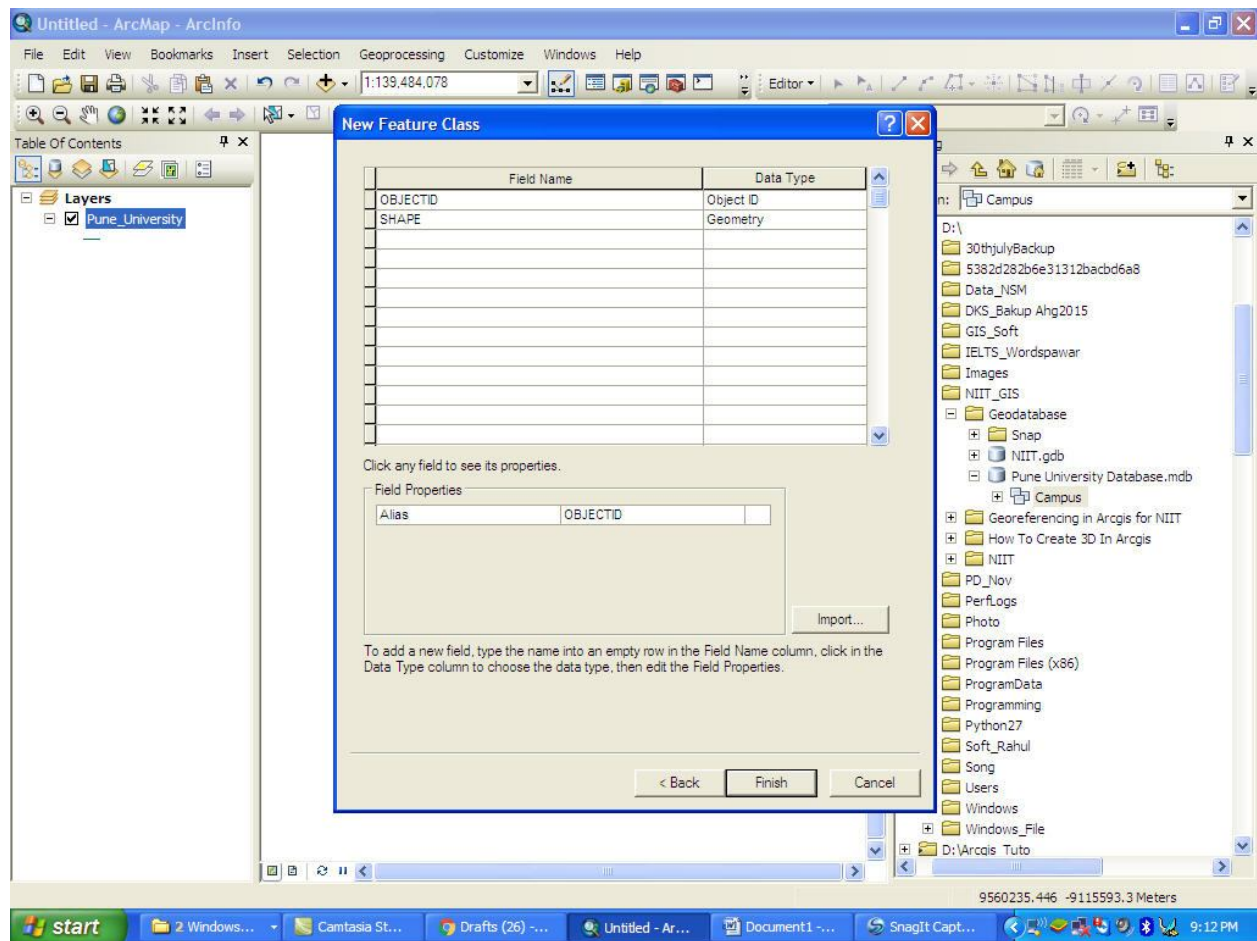


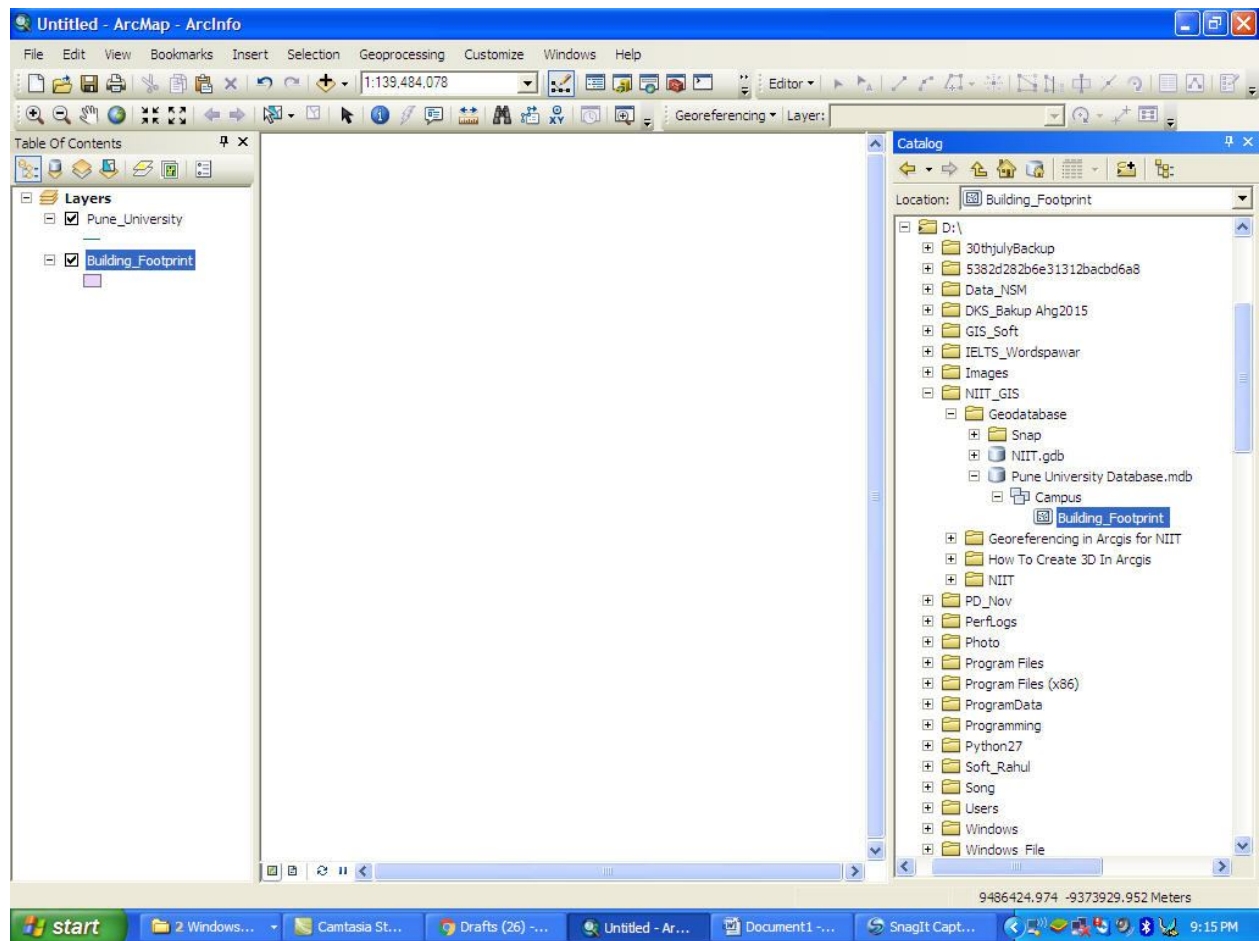












3) ArcSDE Geodatabases: (Spatial Database Engine)