

## Learning about SSIS (SQL Server Integration Services)

### What is SSIS?

- SSIS stands for SQL Server Integration Services.
- It is a component available in the Microsoft SQL Server database software used to perform a wide range of integration tasks.
- It is a data warehousing tool used for data extraction, loading the data into another database, transformations such as cleaning, aggregating, merging data, etc.
- SSIS is used to perform a wide range of transformation and integration tasks. As a whole, the SSIS tool is used in data migration.
- SSIS is a tool mainly used to perform two functionalities:
  - Data Integration
  - Workflow

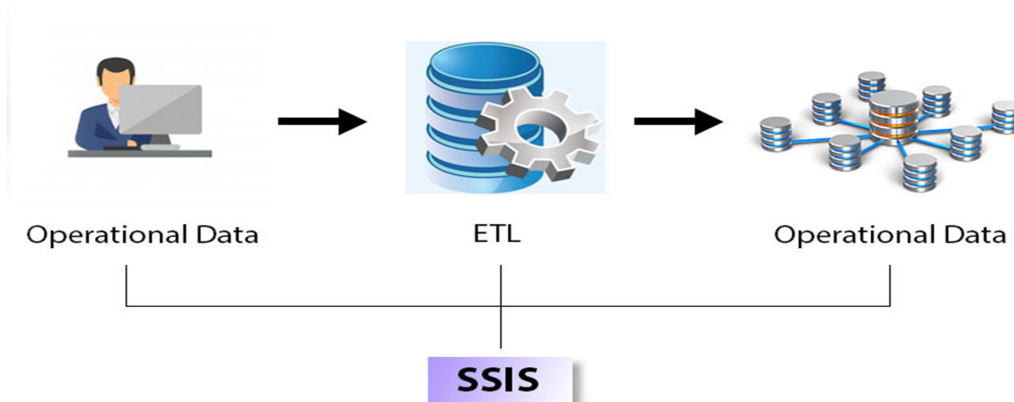
### What is Data Integration?

- Data Integration is a process that you follow to integrate the data from multiple sources. The data can be structured, semi-structured, or unstructured. In Data Integration, the data from different dissimilar data sources integrate to form some meaningful data.

### Why SSIS?

- Data can be loaded in parallel to many varied destinations
- Removes the need of hard core programmers
- Integration with other products
- Cheaper than other ETL tools
- Complex error handling within data flows.

### How SSIS works?



### **Operational data**

- Operational data is a database used to integrate the data from multiple data sources to perform additional operations on the data. It is the place where the data is housed for current operation before sending to the data warehouse for storing, reporting, or archiving.

### **ETL**

- ETL stands for Extract, Transform, Load
- ETL is the most important process in SSIS tool. ETL is used to Extract, Transform, and Load the data into a data warehouse.
- ETL is a process responsible for pulling out the data multiple data sources, transforming the data into useful data, and then storing the data into a data warehouse. The data can be in any format xml file, flat file, or any database file.
- It also ensures that the data stored in the data warehouse is relevant, accurate, high quality, and useful to the business users.
- It can be easily accessed so that the data warehouse can be used effectively and efficiently.

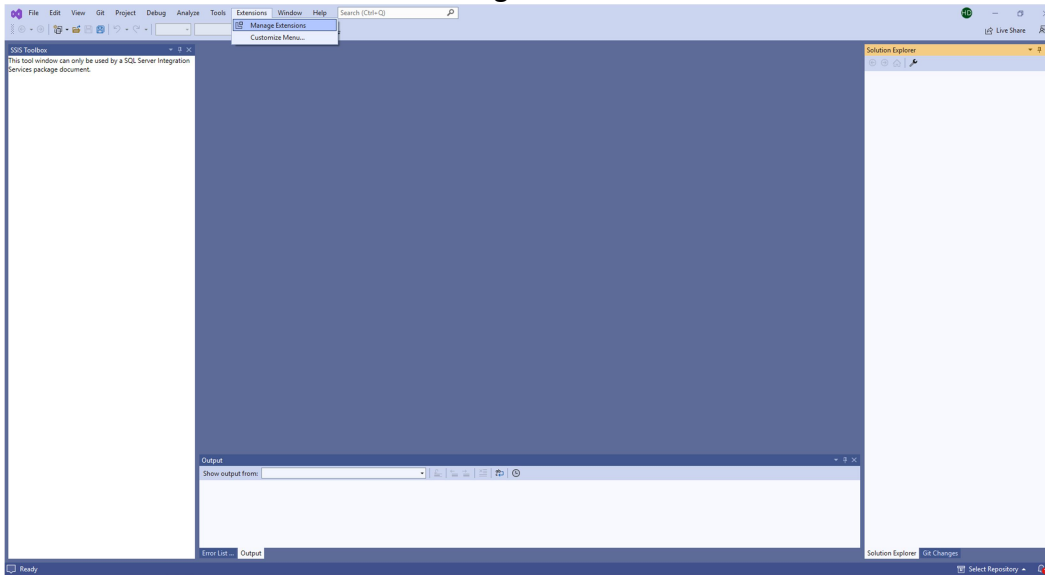
### **Requirements for SQL Server Integration Services**

- Install the SQL Server
- Install the SQL Server Data Tools
- Visual Studio 2022

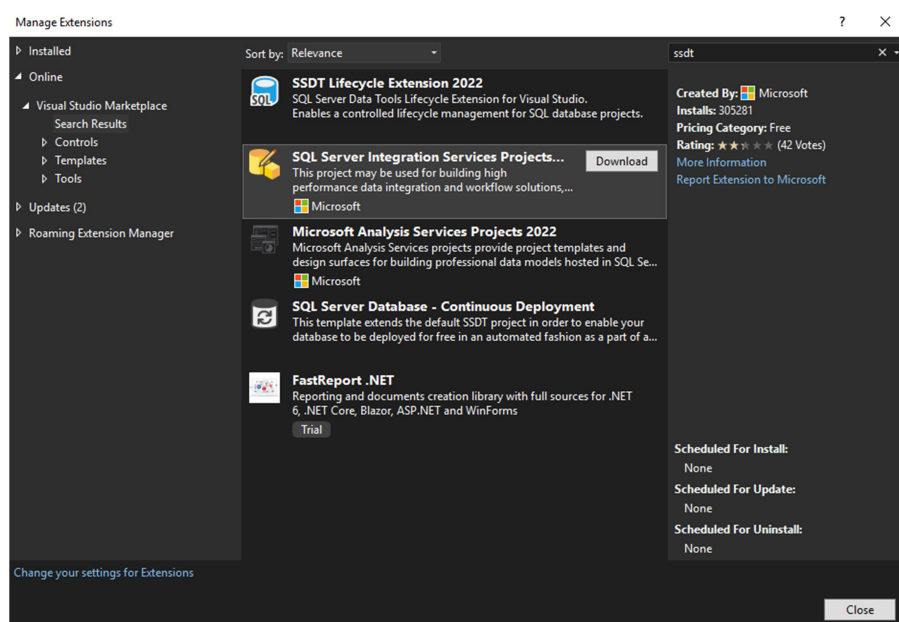
## How to Install Required Packages?

Follow the below steps to install the SQL Server Data tools:

**Step 1:** Go to Visual studio and click on Manage Extension from Extension tab.

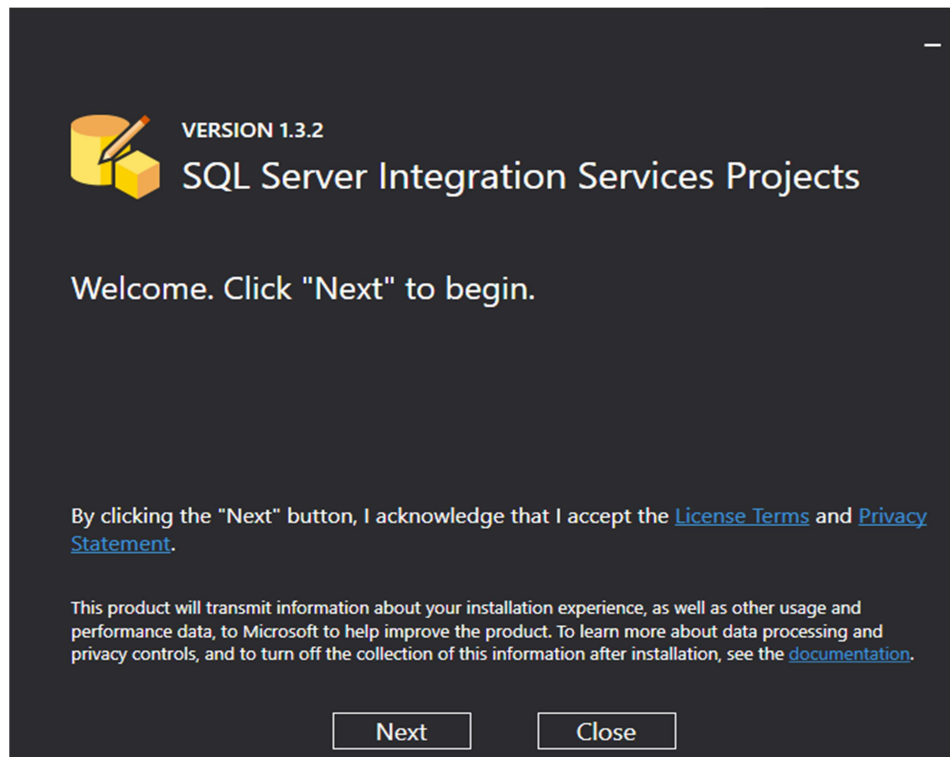


After Clicking on that you will see Pop-Up screen and search for “SSDT”  
You will see below screen.

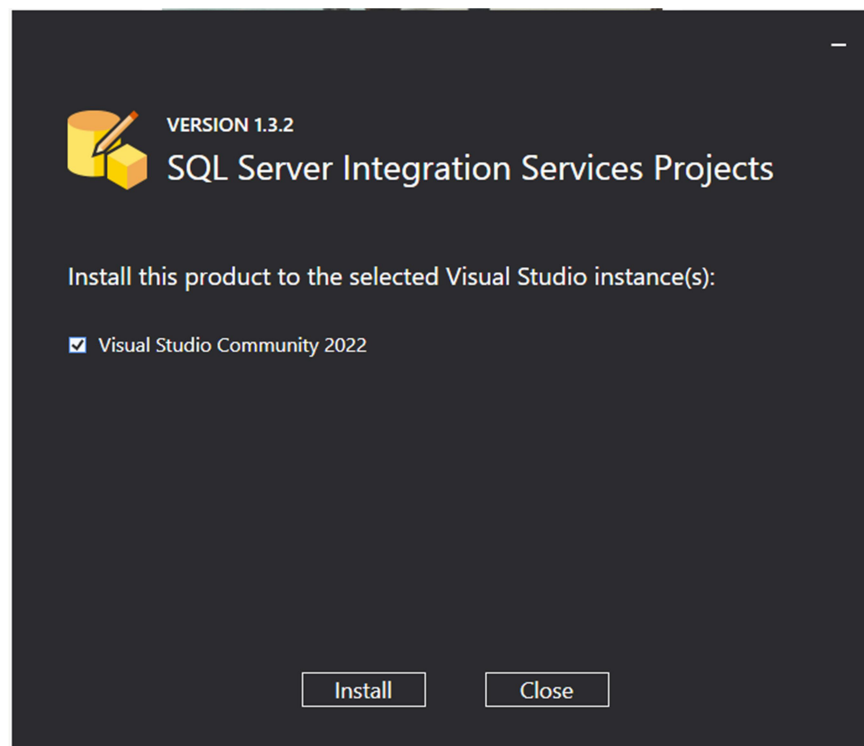


Download SQL server Integration Services Projects.

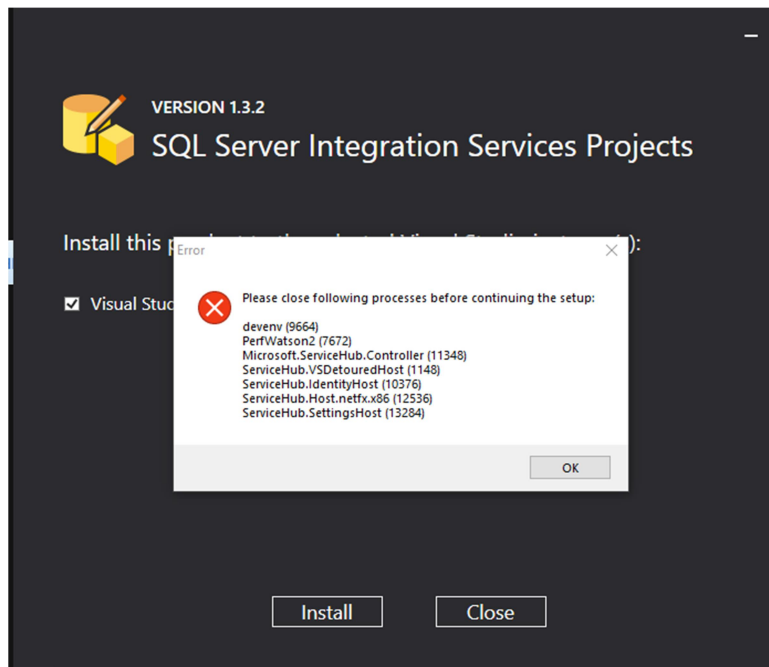
**Step 2:** Install downloaded .exe file.



Click on Next and select Visual studio 2022 and install it.



You might get error like below:

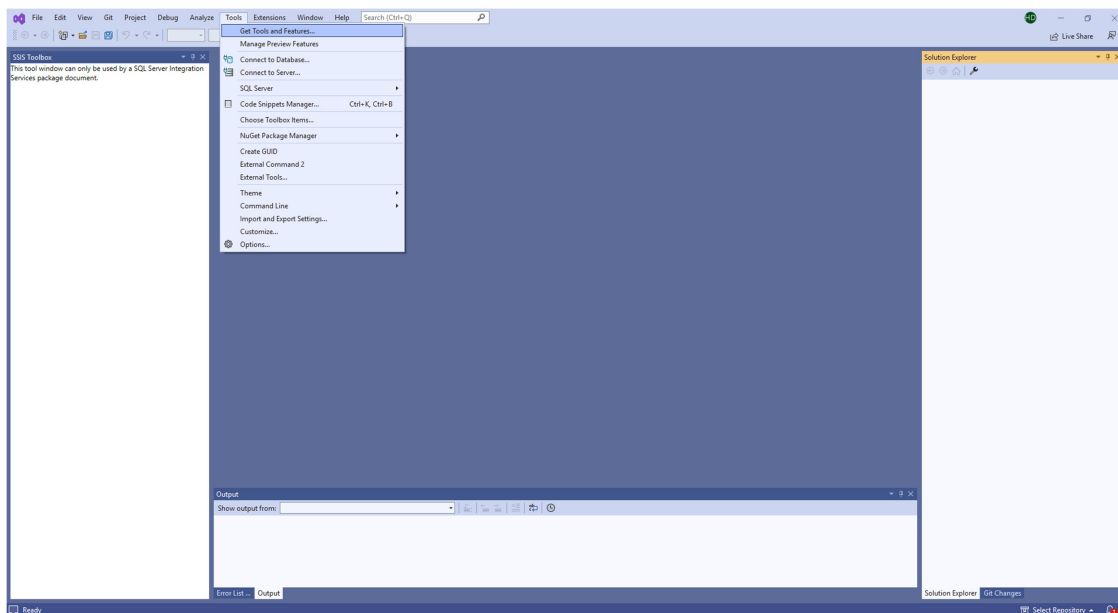


If this error occur than Close your visual studio or restart your PC and try again for download.

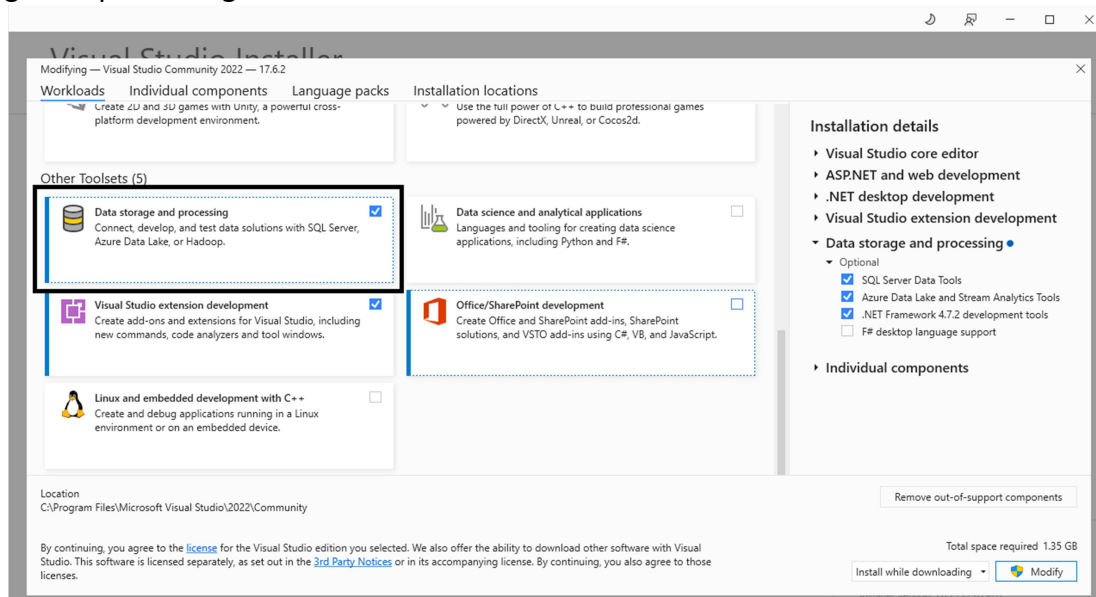
For Creating SSIS project you need to download “Data Storage and Processing” Toolset

**Follow the below steps to install the Data Storage and Processing Toolset:**

**Step 1:** In visual studio click on Get Tools and feature in Tools Section

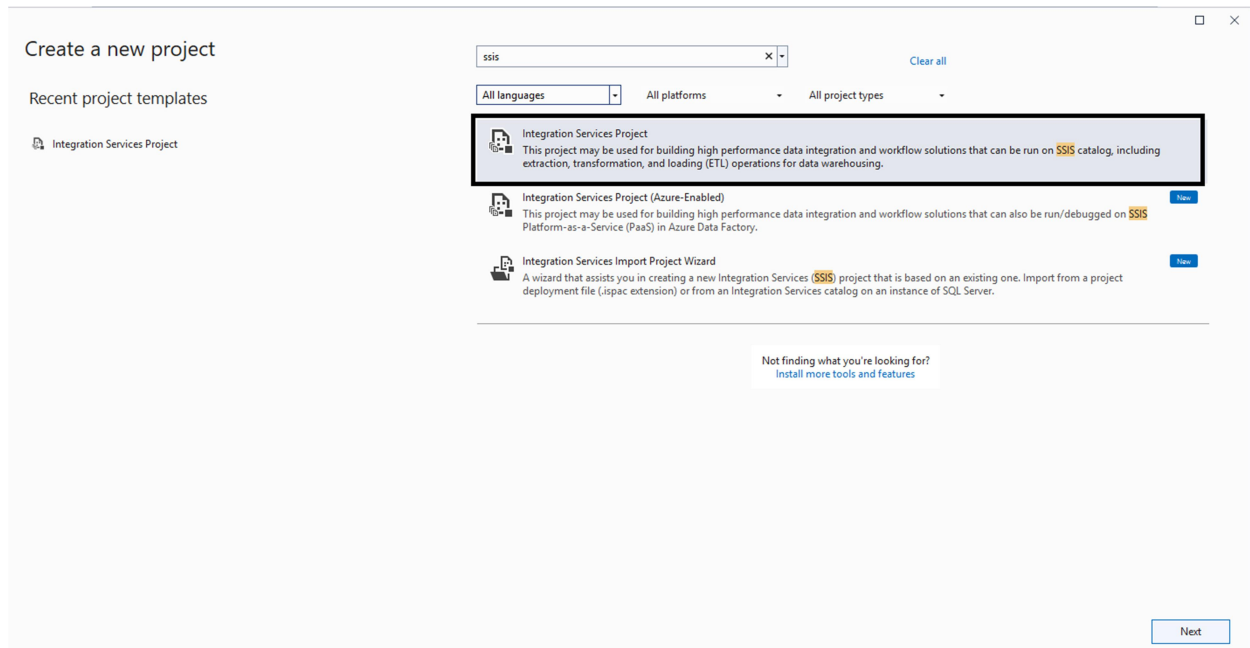


**Step 2:** After selecting you will see one screen of different toolsets. From that select Data Storage and processing and install it.



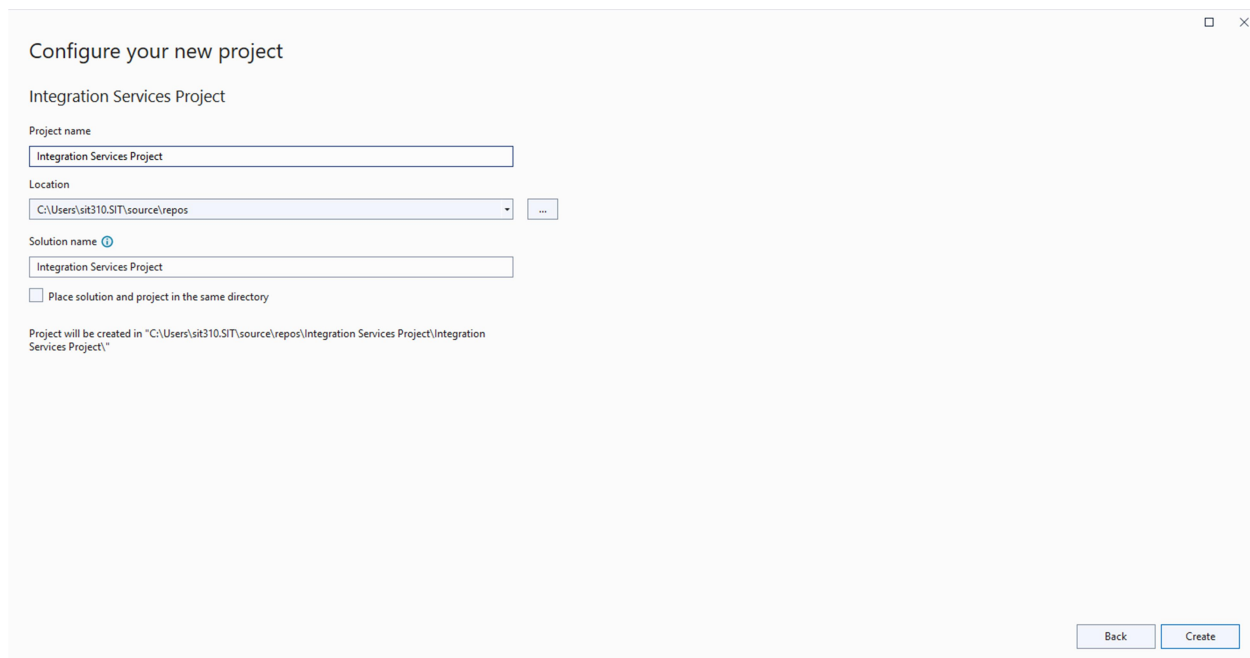
## Creating First Project with SSIS

**Step 1:** After installation of all things go to visual studio and create new project after that search for “SSIS” you will see below screen



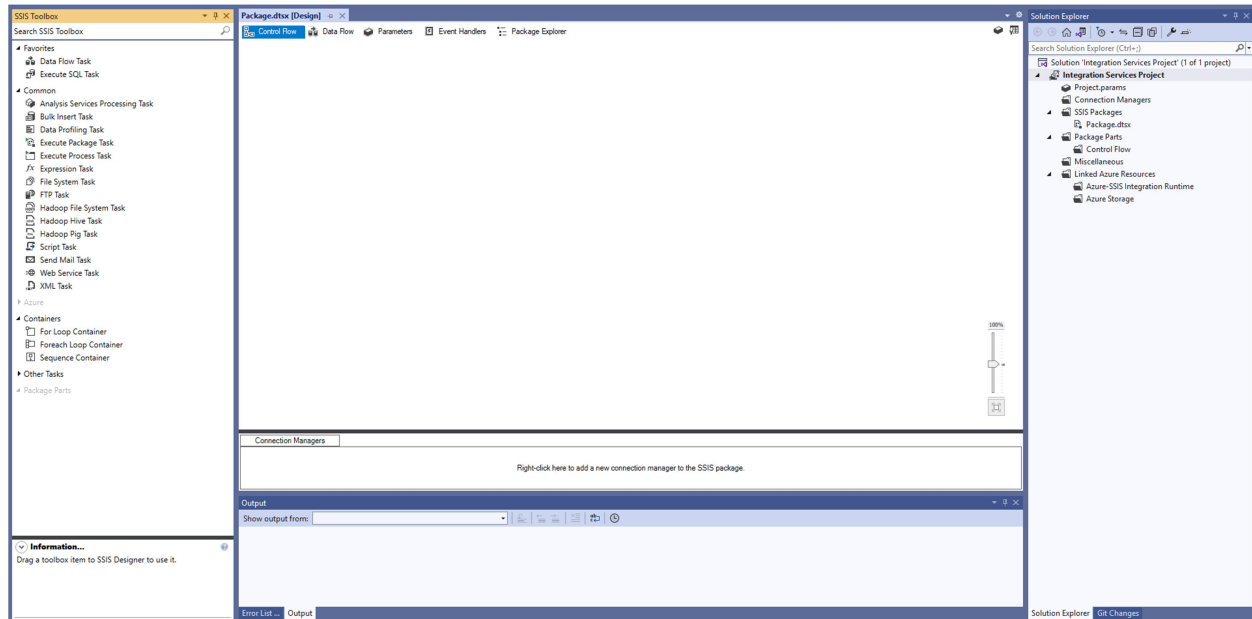
Create Project with “Integration Services Projects”

**Step 2:** Give your project name and Location of project and Click on Create.



After click on Create you have successfully create your First SSIS project

You will be seen screen like below



- In this project structure left hand side you will be seen different toolbox which will be included different task list like Data flow task, SQL task, Script email related tasks etc.
- In top side you can see tabs which will be used while project structure.
- In right side solution explorer is there in which you can see project params, Connection for projects, SSIS packages list.
- And in center we can create and see our flow of project how it will be executed.

- **SSIS Project**
  - A versioned Container For parameters and packages
- **SSIS**
  - A unit of task flow execution
  - A unit of deployment
- **Control Flow**
  - It is brain of package
  - Decides the order of execution for all its components
- **Tasks**
  - Individual unit of work is called as tasks
- **Precedence constrains**
  - Directs tasks to executes in given order
  - Defines the workflow of SSIS package



- **Data Flow**
  - It is the heart of package. Which provide capability to implements ETL.
- **Sources**
  - Components which specify the location of the source data.

**Others keywords to know**

- Transformation
- Destination
- Variables
- Parameters
- Error Handling and Logging

## References

<https://intellipaat.com/blog/tutorial/msbi-tutorial/ssis/>

<https://learn.microsoft.com/en-us/sql/integration-services/lesson-1-create-a-project-and-basic-package-with-ssis?view=sql-server-ver16>

[https://youtube.com/playlist?list=PL\\_YF--8vjjEVEXMf2hEFn0D5tEJV9kRqi&si=hs0vviGqcEP9IgKC](https://youtube.com/playlist?list=PL_YF--8vjjEVEXMf2hEFn0D5tEJV9kRqi&si=hs0vviGqcEP9IgKC)

**Further go with**

- Excel Upload
- Integrate Packages with Asp.net application
- Scheduling of package