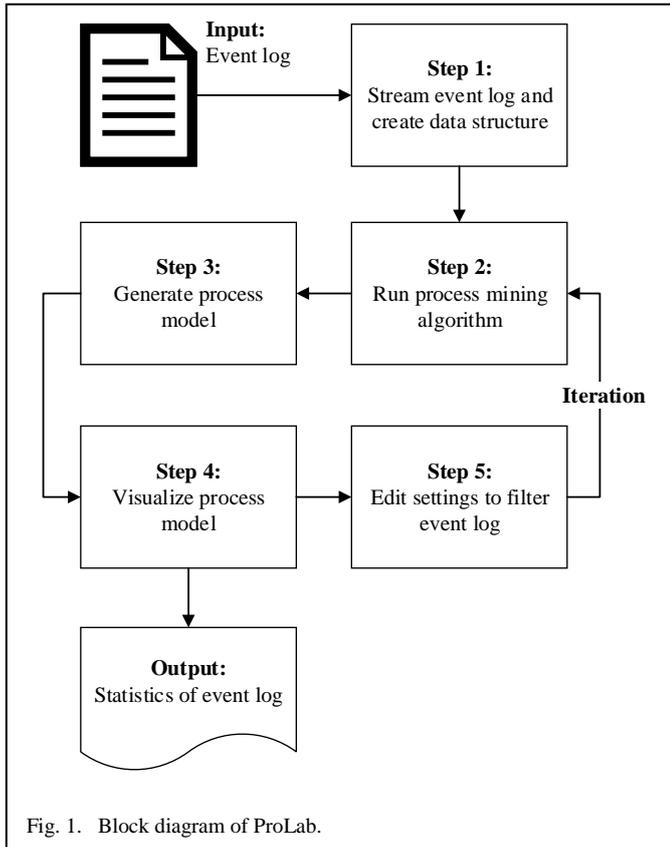


features allow users to perform a detailed analysis on the event logs.



In addition to visualization of the process model, statistical information about the event logs is presented to the user through a dashboard page with graphics and tables. With this dashboard page, users can get deep insights about the process flows.

### B. Comparison of the Tool

Academic and commercial tools have been developed for process mining techniques. While ProM tool is used for academic purposes, Disco and Celonis tools are commercial software products developed by different companies. Table I presents the comparison of process mining tools.

The proposed tool, ProLab, uses streaming method to read event log files, while other tools work by loading the event logs into memory. Their methods lead to the problem of memory insufficiency in very large volume of event logs. All the tools visualize the representation of generated process model after analyzing the event logs. Disco, Celonis and ProLab tools play with the adjustment of visual settings, allowing quick access to desired information. All applications, except ProM, support to make visual adjustments and give detailed statistics of event logs on a dashboard page by using graphics and data tables so that the desired information can be accessed quickly.

In contrast to other tools, only the proposed tool provides an interactive environment for the users. This interactive environment allows the user to merge, delete, or add a new

activity in the event logs. The user can immediately see the effects of this change on the process flows.

While *offline fashion* is a method to analyze the processes by using the historical event logs, *online fashion* is called instantaneous analysis of event records formed by ongoing process records. ProLab has the ability to analyze the processes with both offline and online fashion.

TABLE I. COMPARISON OF PROCESS MINING TOOLS

	ProM	Disco	Celonis	ProLab
Streaming	No	No	No	Yes
Model visualization	Yes	Yes	Yes	Yes
Visualization settings	No	Yes	Yes	Yes
Insights	No	Yes	Yes	Yes
Interactive environment	No	No	No	Yes
Offline fashion	Yes	Yes	Yes	Yes
Online fashion	No	No	No	Yes

### C. Case Study

Table II shows an example event logs. Each row in the table represents a completed process flow. A, B, C, D, E, F in the process flow are the names of the activities that can take place in the process execution.

TABLE II. SAMPLE EVENT LOGS

Case ID	Events
Case 1	ABCDF
Case 2	ACDEF
Case 3	ACBDF
Case 4	ABEF
Case 5	ABCDF
Case 6	ABCDF
Case 7	ACBDF
Case 8	ACDEF
Case 9	ACBDF
Case 10	ACDEF
Case 11	ABCDF
Case 12	ABEF
Case 13	ACDEF
Case 14	ABCDF

The proposed tool, ProLab, has the option of advanced settings to perform detailed analysis from different point of views. *Case Frequency* and *Activity Frequency* options are available for filtering event logs.

The process instance, ABCDF, in the example event log repeated 5 times and the frequency is 35.71%. The second process instance, ACDEF, repeated 4 times and the frequency is %28.57. The third process instance, ACBDF, repeated 3