**ABSTRACT:**

* An automatically teller Machine (ATM) is a safety-critical and real-time system that is highly complicated in design and implementation. This paper presents the formal design, specification, and modeling of the ATM system using a denotational mathematics known as Real-Time Process Algebra (RTPA). The conceptual model of the ATM system is introduced as the initial requirements for the system.The architectural model of the ATM system is created using RTPA architectural modeling methodologies and refined by a set of Unified Data Models (UDMs), which share a generic mathematical model of tuples. The static behaviors of the ATM system are specified and refined by a set of Unified Process Models (UPMs) for the ATM transition processing and system supporting processes. The dynamic behaviors of the ATM system are specified and refined by process priority allocation, process deployment,and process dispatch models. Based on the formal design models of the ATM system, code can be automatically generated using the RTPA Code Generator (RTPA-CG), or be seamlessly transformed into programs by programmers. The formal models of ATM may not only serve as a formal design paradigm of real-time software systems, but also a test bench for the expressive power and modeling capability of exiting formal methods in software engineering.

**INTRODUCTION** :

* In Java, we can create an ATM program for representing ATM transection. In the ATM program, the user has to select an option from the options displayed on the screen. The options are related to withdraw the money, deposit the money, check the balance, and exit.

**BENEFITS OF ATM MACHINE:**

* Open or withdraw a fixed deposit
* Recharge your mobile
* Pay income E
* Pay insurance premium
* Apply for personal loan
* Transfer cash
* Pay your bills

**Details Required:**

**High level Requirements:**

PIN SETTING FUNCTION AND NON FUNCTIONAL

* Correct PIN allows transactions
* Must be entered correctly within a certain number of attempts

Cash dispenser function and non functional

* Dispenses cash
* Can be opened and refilled with cash

**Low level Requirements:**

Printer function and non functional

* Receipt printed upon demand
* Can be opened and refilled with paper

ATM STATE function and non functional

* Defaults to idle upon completion of transactions
* Can be shut down and restarted