JAVA RING

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OVERVIEW

1. INTRODUCTION
2. HISTORY
3. COMPONENTS
   3.1 JAVA VIRTUAL MACHINE
   3.2 RAM
   3.3 ROM
   3.4 REAL TIME CLOCK
   3.5 IBUTTON
   3.6 BLUE DOT RECEPTOR
4. WORKING
5. APPLICATION
6. SECURITY
7. ADVANTAGES & DISADVANTAGES
8. CONCLUSION
Java Ring in its natural environment..
INTRODUCTION

- A Java Ring is a finger ring that contains a small microprocessor with built-in capabilities for the user.

- It contains an inexpensive microprocessor in a stainless steel iButton running a JVM and it is preloaded with applet.

- The java Ring is an extremely secure Java-Powered electronic token.

- Java Ring could have a number of real-world application.
JAVA RING
In the summer of 1989, Dallas Semiconductor Corp. produced the first stainless-steel-encapsulated memory device called iButton.

- iButton is the main component of Java Ring.

- Java Ring was introduced at their JavaOne Conference in 1998.
COMPONENTS

- JAVA VIRTUAL MACHINE
- RAM
- ROM
- REAL TIME CLOCK
- IBUTTON
- BLUE DOT RECEPTOR
JAVA VIRTUAL MACHINE (JVM)

- Java ring is programmed with java application program and applets, that communicate with the host application on the networked system.

- Applets are the small application that is designed to run on another application system.

- The java virtual machine is the piece of software that recognizes the java language and translate the byte code, which is used by the system which is connected to the java ring via ring reader.
RAM

- Java ring contains 134kb of non-volatile random access memory.
- Non-volatile random access memory offers high read/write speed.
- Provides temper resistance tempering through rapid zeroization.
- High security is offered by the ability to erase the content of NVRAM extremely quickly.
The java ring contains 32kb of ROM.

E-Commerce operating system based on java and JVM is stored in the ROM.

Also handles all the operation which is happening in the iButton.

Not altered by the user
REAL TIME CLOCK

- In the java ring real time clock gives the exact time of the day.

- A 32-kilohertz crystal oscillator is used in the Java iButton to operate the time-of-day clock at a constant and well-controlled frequency that is independent of the processor clock.
iBUTTON

- The jewel of the java ring is the java iButton.
- It contains the one million transistor processor.
- Housed in a round stainless steel button.
- Originally called touch memory devices they were later renamed as "iButtons packaged" like batteries.
- It does not have internal power source.
- Advantage in terms of longevity and durability.
BLUE DOT RECEPTOR

- Read and write operation in java ring on blue dot receptors.
- Off the shelf connectivity
- Supports for upto 2 iButtons.
Blue Dot Receptor..
- Java Ring is programmed with the applets and the programming is done according to our application.

- All information of the user is stored in the java ring.

- User simply has to press the signet of the java ring against the blue dot receptor and the system connected to the receptor performs the function that the applets instruct it to.
APPLICATION

- Although Java Ring’s aren’t widely used yet, such rings or similar devices could have a number of real-world applications, such as starting your car and having all your vehicle’s components (such as seat, mirrors, and radio selections) automatically adjust to your preferences.

- In Turkey as an e-purse for the mass transit system

- in Argentina and Brazil for parking meters

- And in the United States as Blue Mailbox attachments that improve postal efficiency.
- The rings are given to students and have been programmed to:
  - store electronic cash to pay for lunches
  - automatically unlock doors
  - take attendance
  - store medical information
  - allow students to check out books.

Students simply press the signet of their Java Ring, and it performs the desired function.
SECURITY

- The barrier substrate and the triple layer technique effectively deny access the unauthorized access to the NVRAM confidential data.

- In the worst case if any unauthorized access penetrates the barrier the security processor detects it and immediately the data which is written in the NVRAM.

- If any attempt is made to penetrate these barriers, the NVRAM data is immediately erased.

- Java Rings are authorized through personal identification numbers (PINs), so that no one can steal a person's ring.
Opening doors...
KEY FOB
Advantages...

- A very easy and convenient way for users.
- More secure than using passwords.
- Portable.
- Ruggedness.
- Wearable.
Contd...

- Provides authentication to users which is crucial for many applications.

- Easier for administrator to maintain the security infrastructure.

- Provides real memory, more power, and a capacity for dynamic programming
Disadvantages...

- Parents and teachers will have less control over children and students
- Loss of privacy
Conclusion...

- The java powered cryptographic iButton named java ring can readily support the commerce models that have traditionally been the province of credit cards.

- Its greatest promise appears to lie in its capacity to interact with Internet applications to support strong remote authentication and remotely authorized financial transactions.

- The use of Java promotes compatibility with these applications by providing a common language for all application programming.
REFERENCE

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THANK YOU