JAVA RING

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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.
HISTORY

- In the summer of 1989, Dallas Semiconductor Corp. produced the first stainless-steel-encapsulated memory device called iButton.

- Java Ring was introduced at their JavaOne Conference in 1998

- Java Ring is a stainless-steel ring, that houses a 1-million-transistor processor, called an iButton. The ring has 134 KB of RAM, 32 KB of ROM.
Components in java ring

- Java Virtual Machine (JVM)
- RAM
- ROM
- real-time clock
- iButton
- Blue dot receptor
Java Virtual Machine

- JVM is the heart of Java’s network orientation
- Large Java stack supports complex computation.
- Automatic garbage collection for efficient reuse of memory space
RAM and ROM

- Java ring contains 134kb of non-volatile random access memory. Program and data is stored in this NVRAM.

- High security is afforded by the ability to erase the contents of NVRAM extremely quickly.

- The java ring contains 32kb of ROM.

- Ecommerce operating system is stored in ROM because it is not supposed to be 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.
The iButton was invented and is still manufactured exclusively by Dallas Semiconductor.

Each iButton starts with a guaranteed-unique registration number engraved in the silicon.
Blue Dot Receptor

- iButton requires connection to a reader known as a Blue Dot Receptor in order to be supplied with power and to receive input and send output.

- The read/write operation will be done by this blue dot receptor provided by RS232 serial port adaptor.

- Receptor cable connects to the USB port of PC or any embedded system.

- The information is transferred between the ibutton and pc with momentary touching java ring.
Working

- The Java Ring is in fact a Java smart card, which is capable of running Java programs.

- A serial reader connects to a computer's serial port. Communication with a smart card is based on the APDU format.

System architecture on Java card
Working

- An applet written to run on the Java ring follows a very simple structure.
  The methods are as follows:

- deselect -- another applet, or possibly this one, is about to be selected
- install -- installs the applet
- process -- incoming APDUs arrive here
- select -- called when a select command is received
Security

- The java ring provides very high degree of security for the confidential data that is stored in the NVRAM memory.

- Armored with stainless steel for the hard knocks of everyday use.

- Java rings are authorized through Personal Identification Numbers (PINs) so that no one can steal a person’s ring and use that ring.
Applications

- Java ring is used for getting account balance of an user through internet.

- In celebration school, each student is issued a Java Ring.

- Java ring is used in opening the door.

- Java ring can also be used in the security of car.
Disadvantages of Java Ring

- The cost of implementing the java ring could be very high.

- The problem with the Java Ring is that many of the organization don't even know the existence of Java Ring.

- Only limited amount of information can be stored so, an individual might need to carry more than one Java Ring.

- Carrying the Java Ring everywhere could lead to theft issues.
Conclusion

- A very easy and convenient way for users.

- It is more secure than using passwords, since passwords are short or can be guessed.

- A ring is a personal thing that the user and only the user carries along anytime and anywhere, so that he can authenticate himself in every situation.

- It is also possible to use a tag on the key ring or a watch instead of a ring.
References

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THANK YOU

Any Queries ???