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e News Letter

Department of Computer Science and Information Technology



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Department of Computer Science & IT
Sam Higginbottom Institute of Agriculture,
Technology and Sciences
(Deemed to be University)
Allahabad, UP, India-211007

'Success is the good fortune that comes from aspiration, desperation, perspiration and inspiration'. Evan Esar'

Greetings to all and a very special welcome to dear fresher's into SHIATS family,


The beautiful quote from Esar should be remembered by every fresher throughout their life. University is a place where the life of a person takes a new turn which sounds exciting and perturbing as well. A student enters into the University life with hopes and goals. An active and healthy participation in the University will help in fulfilling those hopes and achieving success. The initial life at the University sounds overwhelming to you right now. The Fresher's Week and a month after is all about settling in and finding your own place. Soon you will get the grip of the University life and will enjoy the stay. Hope you will maintain the decorum and sanctity of the institution and live in an atmosphere of harmony with peers and seniors.

Focusing on the contemporary trends, our efforts will continue for the advancement of the success of the newsletter in highlighting the role of Information & Communication Technology as an integral part of our society. The newsletter will continue to be a vehicle for promoting fluent communication among all members of the fraternity in all subject areas. Consistent with the revised format and content of the e news letter, contributions and essays on new technologies, new research challenges are highly encouraged. Essays should be interesting review articles on research and educational aspects of ICT, including neat derivations of didactic results, discussions of educational issues, historical matters, and so on.

High quality scholarly articles for distribution among our colleagues and students are encouraged. Additionally, by providing general news and announcements, the newsletter will provide more relevant information to professionals within the ICT community.

Editor in Chief

Events of the session (DNDU WRXH)

| | |
|---|---|
| | <p><u>January</u></p> <p>Inauguration of first E_News Letter from the Department by Hon'ble VC Rev. Prof. Dr. R. B. Lal. Officials from academy & administration have participated in the event. Event witnessed overwhelming response from students</p> |
| | <p><u>April</u></p> <p>1 CETPA-Organized a workshop on oracle DBA on 21st April.</p> <p>2 A shuttle badminton tournament was organized by sports Committee of the Department of Computer Science on 24th & 25th of April'12.</p> |
| | <p><u>May</u></p> <p>1 An open talk with Mr.Neeraj Chaturvedi, working at credit Juisse,North California,USA, was held on 25th May. Mr. Neeraj has shared his experiences in IT industry & also emphasized need for change in course curriculum . He answered queries of participants with serenity.</p> <p>2 B.Tech CSE II, IV & VI sem students offered farewell 'Atisarg 12' to VIII semester students on 3rd May.</p> |
|  | <p><u>June</u></p> <p>Prof.(Col.) Gurmit Singh, Head, Dept. of Comp. Sc. & IT, has retired from his service on 30th of June'12 & now serving as Professor Emeritus in the Department from July'12.</p> |
| | <p><u>July</u></p> <p>1 Eastern zone competition for Inter Battalion Scientific Research, Police photography, Video Graphy, Anti sabotage Check & Computers for 42 Battalion of PAC, Naini, was held on 11th July to 14th July under the supervision of Er.A.Isaac, Er.Arun Kumar Shukla &Mr. Arun Kumar Pandey.</p> |

Student Corner:

Be Health Conscious (During Transition Time)

Health scares during monsoon

- ❑ High humidity levels and dampness increase the risk of fungal infections.
- ❑ Body ache, fever and running nose are the most common health scares during monsoons.
- ❑ General health problems include viral infections, Dengue, Malaria, Typhoid, Chikungunya, Gastroenteritis, Conjunctivitis, Hepatitis A, allergies and colds and cough.
- ❑ Food poisoning and contamination of food can cause Diarrhea.
- ❑ Chronic health problems like Bronchitis and Arthritis tend to act up in this season mainly due to the fall in temperatures.

General health care tips for monsoon

- ❑ Keep your body warm and dry, especially your feet, to avoid fungal infection.
- ❑ Do not stay in wet clothes for too long as it can lead to fungal infection as well as a viral fever and body ache.
- ❑ Drink plenty of water (purified) because high humidity levels tend to damage the skin. It can also cause dehydration.
- ❑ Avoid eating either street food or dining out in unhygienic places as virus and bacteria thrive under these conditions during the rains.
- ❑ Take a bath once a day (in hot water) to wash off impurities and to ward off skin infections.
- ❑ Keep your home clean and do not allow stagnant water to accumulate around the house.
- ❑ Consult a doctor if a fever lasts for more than two days, as it could be a symptom of malaria or typhoid.
- ❑ Wear cotton clothes and loose clothes to keep your body well ventilated.
- ❑ Use rainwear and raingear when you step out to keep yourself dry and to stay warm.
- ❑ Consume moderate quantity of food, as digestion levels are low during this season.

IWHU0&KDWMIHW

Students who have effectively finished MCA have many opportunities as to lock a job in both private and govt. sector.

Software Engineering and Development: Can start career as Trainee Programmer, Software tester, Software Analyst, Software administrator, Software programmer.

The safest principle through life, instead of reforming others, is to set about perfecting yourself. **B. R. Haydon**

Staff Corner:

Presentations: As part of monthly seminar program following is the list of faculty & their seminar topic in brief

| S.No. | Name of the faculty | Title of the topic | Date of presentation | Description |
|--------------|----------------------------|--|-----------------------------|--|
| 1 | Mrs.K.Jeberson | Web services & An Overview | 31 st Jan'12 | Web service components can be integrated with web applications so as to achieve interoperability & reusability of services |
| 2 | Mr.S.T.Singh | Semantic Web | 27 th Feb'12 | A web capable of analyzing all data embed in it |
| 3 | Mr.R.Dileep Kumar | Automation of Software Testing & Industrial Perception | 30 th Mar'12 | Software Testing Automation Tools & Utilities, Reason why only few companies claiming success in automation |
| 4 | Mr.I.B.Rajwade | .NET Framework | 2 nd May'12 | .NET Framework 4.0 Architecture, Features, Application areas, Compatibility options, Future prospects |
| 5 | Mrs.Archana Singh | Introduction to Genetic Algorithm | 1 st June'12 | Definition, Framework, Applications of genetic algorithms |
| 6 | Mr.Anchit Sajal Dhar | ERP – An Introduction | 26 th July'12 | Organizational work flow management with the help of ERP Packages like Oracle 11i & SAP |

Publications:

1. Mrs. Tulika, 'Information Dissemination over VANET utilizing DHT', accepted for publication in 'Frontiers of Computer Science' a publication unit of Springer, in March'12
2. Er.Raghav Yadav & Er. Hari Mohan Singh, 'Intercycle Switching (ICS) based Dynamic Reconfirmation of p-cycle for Dual Survivability of WDM Networks, Photonic Networks Communications', Published by Springer, SCI referred journal

Biometric Smart Card Technology: A Future Authentication Tool for Smart Citizens

Mr. P. Stanley,
Assistant Professor,
Dept. of Computer Science & I T, SHIATS, Allahabad.

1. INTRODUCTION

Smart card is too smart as the name suggest and is about to revolutionize the world in the near future. It is an apt tool to improve the present scenario of government to citizen service delivery mechanism with enhanced security and ease of handling. A biometric smart card protects biometric data and provides a reliable solution where there are privacy concerns.

A smart card is a plastic card embedded with a computer chip that stores and transacts data between users. This data is associated with either value or information or both and is stored and processed within the card's chip, either a memory or microprocessor. The card data is transacted via a reader that is part of a computing system. To various degrees, all applications can benefit from the added features and security that smart cards provide. According to Dataquest, the worldwide smart card market will grow to 6.8 Billion units and \$11 Billion by 2006

2.0 SMART CARD TECHNOLOGY

Smart card is a pocket-sized card with embedded integrated circuits which may have processor and memory and complying with ISO 7816 standards. Memory based smart cards contain only non-volatile memory storage components, and perhaps some specific security logic. Microprocessor based cards contain volatile memory and microprocessor components. The card is made of plastic, generally PVC. The card may embed a hologram to avoid counterfeiting. There formats of card include magnetic strip cards and optical cards. A magnetic stripe card has a strip of magnetic tape material attached to its surface. This is the standard technology used for bank credit/debit cards and can only store data which cannot be updated. Optical cards use some form of laser to read and write to the card. Memory cards can store a variety of data but cannot process information. Smart cards with microprocessors look like standard plastic cards, but are equipped with an embedded Integrated Circuit (IC) chip. They can store information, carry out local processing on the data stored, and perform complex calculations. Smart cards are broadly classified on the basis of card components, card interface, and card OS.

3.0 CLASSIFICATION

There are mainly two classifications based on their operational functionality. They are Contact smart card and Contactless smart card.

3.1.0. CONTACT SMARTCARD

Contact smart cards have a contact area, comprised of several gold-plated contact pads, that is about 1cm square.

When inserted into a reader, the chip makes contact with electrical connectors that can read information from the chip and write information back.

There are some ISO standards to define the quality of contact smartcard. They are ISO/IEC 7816 and ISO/IEC 7810 series. The physical shape, position of electrical connectors, communication protocols etc. are the parameters assessed for standards.

The cards do not contain batteries. The energy required for processing is supplied by the card reader. Contact smart card readers are used as an interface to connect with other devices.

3.2.0. CONTACTLESS SMARTCARD

The chip communicates with the card reader through RFID(Radio Frequency Identification) induction technology (at data rates of 106 to 848 kbit/s). These cards require only close proximity to an antenna to complete transaction. The ISO standard for contactless smart card communications is ISO/IEC 14443, dated 2001. It defines two types of contactless cards ("A" and "B"), allows for communications at distances up to 10 cm. There had been proposals for ISO 14443 types C, D, E and F that have been rejected by the International Organization for Standardization. An alternative standard for contactless smart cards is ISO 15693, which allows communications at distances up to 50 cm. Example of widely used contactless smart cards are Hong Kong's Octopus card, and Japan Rail's Suica Card; which predate the ISO/IEC 14443 standard.

4.0. APPLICATIONS

The applications of smart cards include credit or ATM cards for financial transactions, SIMs(Subscriber Identification Modules) are used for mobile phones, authorization cards for pay television, pre-pay utilities in household, high-security identification and access-control cards, and public transport and public phone payment cards. RFID technology based smartcard is used mainly in Libraries as customer authentication card and book identification tag. Digital video broadcasts accept smart cards as electronic keys for protection. Smart cards can also act as keys to machine settings for sensitive laboratory equipment and dispensers for drugs, tools, library cards, health club equipment etc. Gujarat was the first state in India to introduce the smart card license system in 1999. To date the Gujarat Government has issued 5 million smart card driving licenses to its people.

5.0 BIOMETRIC AUTHENTICATION

Authentication systems can be categorized according to the number of identification factors required to ascertain identity. Single-factor authentication uses user ID/password combinations to prove identity. Two-factor authentication

requires two components, usually a combination of something the user knows (such as a password) and something the user possesses (such as a physical token Secure ID card). Three-factor authentication adds a biometric, a measurement of a human body characteristics. The more authentication factors used, the more secure the process. Single-factor authentication with user ID and password is the most common authentication system today. The higher level of authentication comes with additional system cost, however, due to the necessary tokens and token readers. In addition, tokens can be easily lost, which can present a high administration overhead for reissuing. Biometric factors for authentication measure characteristics of voice characteristics. Biometric measurements are a useful additional factor and add an even higher level of authentication security. A biometric authentication system entails a measurement proving who the person actually is, rather than proving they have something such as a token or proving that they know something such as a password. Biometric authentication systems also require biometric readers at system access points, adding new system costs.

6.0 STANDARDS

Smart card standards govern physical properties, communication characteristics, and application identifiers of the embedded chip and data. Almost all standards refer to the ISO 7816-1,2 & 3 as a base reference. Application-specific properties are being debated with many large organizations and groups proposing their standards. Organizations that are committed to compliance with ISO and ITSEC security standards as well as industry initiatives such as EMV, MULTOS, the Open Card Framework and PC/SC specifications. These organizations are active in smart card standardization.

7.0. MEMORY REQUIREMENT

Biometric systems store either the full biometric image or a biometric template. Template sizes are small and according to Frost & Sullivan, range from 9 bytes for hand geometry to 300-1200 bytes for a fingerprint scan to 512 bytes for iris recognition to 1500 bytes for voice verification. Smartcards have sufficient on-card memory to store one or more biometric templates.

8.0. MAJOR IMPLEMENTATIONS

There are numerous government ID systems implemented worldwide that are using smart card and biometric technology, including:

U.S. Department of Defense Common Access Card which includes photo, biometrics (fingerprint), and smartcard chip.

0 D O D \ V L D \ V Q D W L R Q D O , ' * R Y H U Q P H O M z a p i o s m a r t c a r d a p p l i c a t i o n s f r o m d e g e r n a n d e y k
photo, biometrics (fingerprint) and smartcard chip.

Spain's social security card with biometrics and smartcard chip.

1 H W K H U O D Q G V \ V 3 U L Y L X R g s y s t e m w i t h P D W H G E R U G H U F U R V V L
photo, biometrics(iris) and smartcard chip.

Brunei's national ID with photo, biometrics (fingerprint) and smartcard chip.

U.K.'s Asylum Seekers Card with photo, biometrics(fingerprint) and smartcard chip.

9.0 ADVANTAGES

A biometric template is an encrypted hash of actual biometric itself. Once created, the template is digitally signed and locked onto the card by the issuing authority. Any attempt to overwrite would not be authenticated by the issuing authority as the smartcard prevents modifications of its memory by anyone who is not correctly authenticated.

This type of smartcards is secure from stealing the biometric template off of a stolen card. Smartcard are very temper resistant and as such are often the most secure link in the whole security chain of an application. They contain internal thresholds which allow them to detect if the environment is being "hacked". Under these circumstances, the card will either shut itself down (stop responding to the reader).

10.0. CONCLUSION

Biometric based Smartcards clearly will bring convenience to consumers, much as credit and debit cards have done, and in many cases may reduce the fear among the customers regarding the frauds.

Now the technology offers hosting many applications from various industries on a single card which was bottleneck earlier. The real success of biometric smart cards in India is the need to have a single smart card capable of multiple applications.

In the future, smart cards could handle multiple tasks for their owners, from providing access to company networks, enabling electronic commerce, storing health care information, passports, providing ticketless airline travel and car rentals, and offering electronic identification for accessing government services such as benefit payments and drivers licenses. Smart cards of the future may even stop resembling "cards" as smart card technology is embedded into rings, watches, badges, and other forms factors that will make them remarkably convenient to use.

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3. CardLogix Corporation - Smart Toolz Development Kit Handbook <http://www.cardlogix.com/>
- 4.NIST <http://www.nist.gov/>
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Data Compression

Mr. Surya Prakash Mishra
 Assistant Professor,
 Dept. of Computer Science & I T, SHIATS, Allahabad

Introduction to data compression

The objective of compression is to convert the input data into a format which requires less space for storage

Two major benefits of using compression:

- It takes less space to store the information and therefore takes lesser time to transfer the compressed data through network
- It takes lesser bandwidth in comparison to transmitting raw data

Compression uses the encoding method to code the input data

Types of Compression

Lossless Data Compression:

The compression where the exact input data value will be produced after decompression. Typical example is: text compression

Lossy Data Compression:

The compression where the exact input data value will not be reproduced after the decompression. Typical examples are: Images, audio and video.

Example (Huffman Encoding)

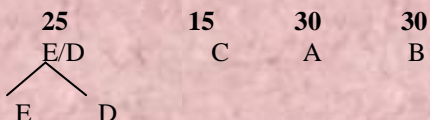
- Huffman coding plays a very important role in compression for both text and image.
- Many compression algorithms use Huffman encoding as the final stage of the compression to achieve optimal compression.
- Thus, to be able to search in Huffman coded data is very critical for fully compressed pattern matching.
- The pattern can be compressed using the same Huffman table that compresses the text and then any pattern searching algorithm should apply directly on the compressed text.

| Symbol | Frequency |
|--------|-----------|
| A | 30 |
| B | 30 |
| C | 15 |
| D | 15 |
| E | 10 |

Arranging the symbols into non-decreasing order of frequencies

10 15 15 30 30
 E D C A B

Chose the two symbols having smaller frequencies



Chose the next two symbols having smaller frequencies

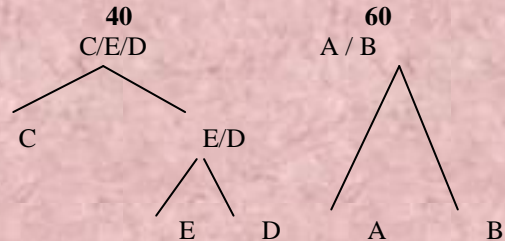


Figure: Huffman Binary Tree

Start the traversal from root to particular leaves will generate the code for that particular symbol. Code corresponding symbols are-

A=10, B=11, C = 00, D=011, E=010

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Little minds are tamed and subdued by misfortunes; but great minds rise above them.
 Washington Irving

Photo Gallery

Inauguration



Shuttle Badminton

CETPA Training



One who fears failure limits his activities. Failure is only the opportunity to more intelligently begin again. Henry Ford

Department of Computer Science & Information Technology

(A) Programmes Offered:

1. Ph.D
2. M.Tech.(Computer Science & Eng.)
3. MCA
4. M.Sc. (Computer Science.)
5. B.Tech. .(Computer Science & Eng.)
6. BCA

(B) Industrial Training:

Department gives facility for industrial training with the following--

1. Hp.
2. Institute of nuclear medicine and allied sciences.
3. Hcl .
4. Tata consultancy.
5. MTS.
6. B & i t.
7. Spaac Computer Consultancy.
8. High Technology Solution.
9. Verus IT services.
10. R.M. Info. Tech.
11. Seeback Software System.
12. Seminal Minds.
13. Nemo technologies pvt. Ltd.
14. Career tech.
15. Bajaj auto.
16. Chaithanya it solution.
17. CMC Ltd.
18. Cypress.
19. Tech. Defence Pvt. Ltd.
20. NTPC.
21. Cetpa.
22. Technix India Solution Pvt. Ltd.
23. BSNL.
24. Intek Computer Education .
25. Aricent Info. Tech

(C) Placement :

Students placed in the following organizations –

1. Accenture Pvt.Ltd.
2. Admocoes Ltd.
3. Cryptograph Technologies
4. Girnar Technologies Ltd
5. HCL
6. i-Flex Pvt.Ltd.
7. IGATE PATNI
8. Indian Army
9. Infosys Technologies Ltd.
10. iT Brain Shapers
11. Knowlett
12. Mahindra Satyam
13. Oracle
14. Panman Software
15. Samsung India Electronics Ltd
16. Satyam
17. Softpro India Technologies Pvt. Ltd.
18. SRT Network Servises Pvt. Ltd
19. T.I.M.E. Pvt. Ltd.
20. Thoughtworks Technologies Pvt. Ltd
21. Thyrocare Technologies Ltd.
22. uCertify
23. UNEVA Development Centre
24. Vangelz Technologies Pvt. Ltd.
25. Wipro Technologies Ltd.
26. ZEP Infratech Ltd

There is nothing noble about being superior to some other man. The true nobility is in being superior to your previous self. Proverb

Teaching environmental science without teaching environmental ethics and also teaching environmental ethics without discussing various fundamental questions of ethics concerning ethical values, the value and means of ethically good life and good society would be of little significance.