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iSHARE
it is power

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Department Of Computer Science UG

Ishare

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Editorial

We would like to wholeheartedly thank our honorable Chairman, Secretary, Executive Director and Principal for their continuous encouragement and constant support for bringing out the magazine. We profoundly thank our Head of the Department for encouraging and motivating us to lead the magazine a successful one right from the beginning. Ishare serves as a platform for updating and enhancing upcoming technologies in Information and Communication. We are grateful to all the contributors to this magazine so far. The magazine has been sent to almost 60 Institutions in and around Tamilnadu. So far we have received feedbacks and appreciations from various Institutions.

We would be very pleased to receive your feedbacks. Please send your feedbacks to ishare@ksrcas.edu

By,

Editorial Board

CONTENT

CENSUS MANAGEMENT WITH PERSONAL DIGITAL ASSISTANT (PDA)

Mr. A. MUTHUSAMY
ASST. PROFESSOR IN COMPUTER SCIENCE

This title is primarily focused on simplifying the process of collection and storage of census data. Helps reduced paperwork for the inspectors to the inspection of census data manually. The inspector is entitled to only provide information for the Census in the PDA and access the data. The entered data will be stored in the database Sqlce with which the PDA is set. After completion of the inspection, the data is uploaded into the SQL Server. It is designed to store data in a database server centrally. After transmission of data from the census, a web service is called to indicate whether the data has been transferred in the desired format. During another inspection for the census, the inspectors have the option of using the Web service to obtain data that are previously captured and inspect again.

The first census in India in modern times was conducted in 1872. First regular census was started in 1881 by Lord Rippon. Since then, a population census has been carried out every 10 years. The latest census commenced on 1 May 2010. Census data obtained is commonly used for research, business marketing, and to prepare the five-year plan.

Information Technology is a wonderful find technological development today. This is in fact influenced, even our day to day. When we got to some forms of skilled labor, which is part of Information Technology is even more important, and very useful.

Our work is playing an important role. In the proposed work, by using the methods of information technology, it is used to collect census data. Census term implies that each person and each set of individual characters are listed separately and features are not recorded separately. Census of the organization has experimented with new IT innovations from the beginning. The technology is needed especially for data collection and processing, primarily due to the large volume and faster tabulation and publication of Census results. This is possible through the use of PDA as a client tool that contains the application of collected census data in it.

Registrar General and Census Commissioner of India under the Ministry of the Interior to authorize state commissioner's census to collect census data by authorized personnel. An adequate training is given on the use of equipment. After that, the PDA is given to the trained personnel who are authorized by the government. The survey collects census data and updates the database of the census. This increases the efficiency of work and a great time is safe. The trained personnel are assigned a particular residential area for every day and within a frame of time they must complete their area. For the list of households, the personnel can get it from the department of revenue.

We think the best solution for the aforementioned compensation system would be using a PDA. But a client tool has not yet been developed.

We have designed and developed as a client tool with PDA technology. The solution to the drawbacks mentioned above for the search is a device that is relatively well equipped device (similar to the laptop / PC) with access to the network, comparatively less energy consuming, easy to carry and able to work even while walking . The best solution in the market is PDA (Personal Digital Assistant), also known as a handheld computer that is a device with high computing power. PDA works as a personal information manager and connect to the Internet. It has a visual electronic display allows enumerator to embed a web browser, and also audio capabilities, allowing to use mobile phones or portable media players. PDA can access the Internet, intranets or extranets via Wi-Fi or wireless wide area networks (WWAN). Many PDAs employ touch screen technology.

Why PDA?

A typical PDA has touch screen for entering data, a memory card slot for data storage and at least one of the following for connectivity: Bluetooth and/or Wi-Fi. The PDA is equipped with Microsoft windows mobile operating system. The advantage of PDA is that we can develop customized applications for it like Visual Studio.NET Compact framework. An important function of PDAs is synchronizing data with a PC. This allows up-to-date contact information stored on software such as Microsoft Outlook to update the database on the PDA.

The usual census data collection system involves an authorized enumerator, who collects the census data manually with paper and pen. This method has been a lot of time consuming and painstaking one.

Innovative thinking helps us to improve the existing system. So we thought the finest solution for this handicap would be using a PDA handheld device. The main idea is to implement this by providing a PDA containing the census application to every enumerator authorized by government through which they can collect census data and update the collected data to the census database thus saving time, money and provide accurate data. If taking census using PDA then census information can be stored in PDA's sqlce database temporarily. Then users or inspectors wish to update the data or information of census into the centralized sql server then using UPDATE option to update the database.

Thus the "Census Management with PDA" has proven that it is easy to enumerate and present the census data meticulously with minimum hardship. In vast country like India, we need a system like this, so that we can save time minimize expenditure and yet have accurate data. In the future census the National Population Register (NPR) is being brought out, this product will be very helpful for maintaining the register.

COMPOSITION OF A COMPUTER SCIENCE PhD THESIS

Mr. T. THIRUVENGADAM
ASST. PROFESSOR IN COMPUTER SCIENCE

Writing thesis is very important, as the scholar will be presenting his/her work to a list of examiners who would approve the research work

carried out by the scholar and make it acceptable to the research community. *How to start? Where to start?* are the two questions scholars find very difficult to answer.

Start from where the research began - the motivation, the need of the work in the present research context and the literature study conducted. Try to start from the scratch. Keep in mind the overall problem statement defined for the PhD research, while drafting the introductory parts. Let it begin with the real-life scenarios, contexts and their relatedness to the research statement, so that it draws the attention of even non-specialized readers. As one proceeds with the writing, the intense of the technical content should increase, focusing onto the core of the research work. All the published works are integrated and clustered to chapters that form the main body of the thesis – methodology, approach, algorithms, models, formulas etc.

However, the results and the interpretation parts are presented in the later chapters. They authenticate the correctness and the reliability of the entire work done. The interpretation part has to address the problem statement,

- how the problem(s) is(are) solved,
- the solutions arrived,
- correctness of the solutions and
- Finally conclude that the need of the work, presented in the first chapter, is satisfied.

Structure of a Computer Science PhD Thesis

Preface	Overall View of the Work
▪ **Introduction**	o Motivation o Need for the Work o Relevant work already done o Structure of the Thesis
▪ **Body of the Research Work**	o Methodology (Research Design) o Proposals, Models, Algorithms, Findings & Solutions o Data Collection
▪ **Results & Interpretation**	o Experimental Design o Preliminary Results & Interpretation o Main Study & Results o Interpretation of the results
▪ **Conclusion**	o Concluding with relevance to literature o Concluding with relevance to Research o Concluding with relevance to Empirical Results
▪ **Future Works**	o Scope of the Solution of this work o Directions to the future o Venues of varied interests
▪ **References**	o Books, Journals, Conference Papers, Thesis o Online materials, Reports, Lecture notes

THE BEST GOOGLE FEATURES YOU'RE PROBABLY NOT USING...

Mr. J. SATHEESH
ASST. PROFESSOR IN COMPUTER SCIENCE

Google is a vast machine with all types of Apps, Programs, and Tools. A lot of these—like Gmail and Google Docs—are clearly useful and beloved by many. But hidden inside Google's network are some awesome, lesser-known gems that can make your life easier.

Over the last couple of years, Google has experimented with a lot of products. Hidden beneath popular apps like Gmail, Google Search, and Chrome are a lot of cool features that most people don't mess around with. Here are some of our favorite unsung Google features, from Google Drive apps to Google+ to everything in between.

### Use Google Drive Apps for Added Functionality and Features

For most of us, Google Drive is just a fancy rebranding of Google Docs. However, the recent integration of web based apps into Google Drive is starting to get interesting. These apps utilize your Google Drive folder directly either by storing new files there, or integrating with the files you already have. Here are a few of the Drive apps we find useful.

Send and Receive Faxes for Free with Hellofax
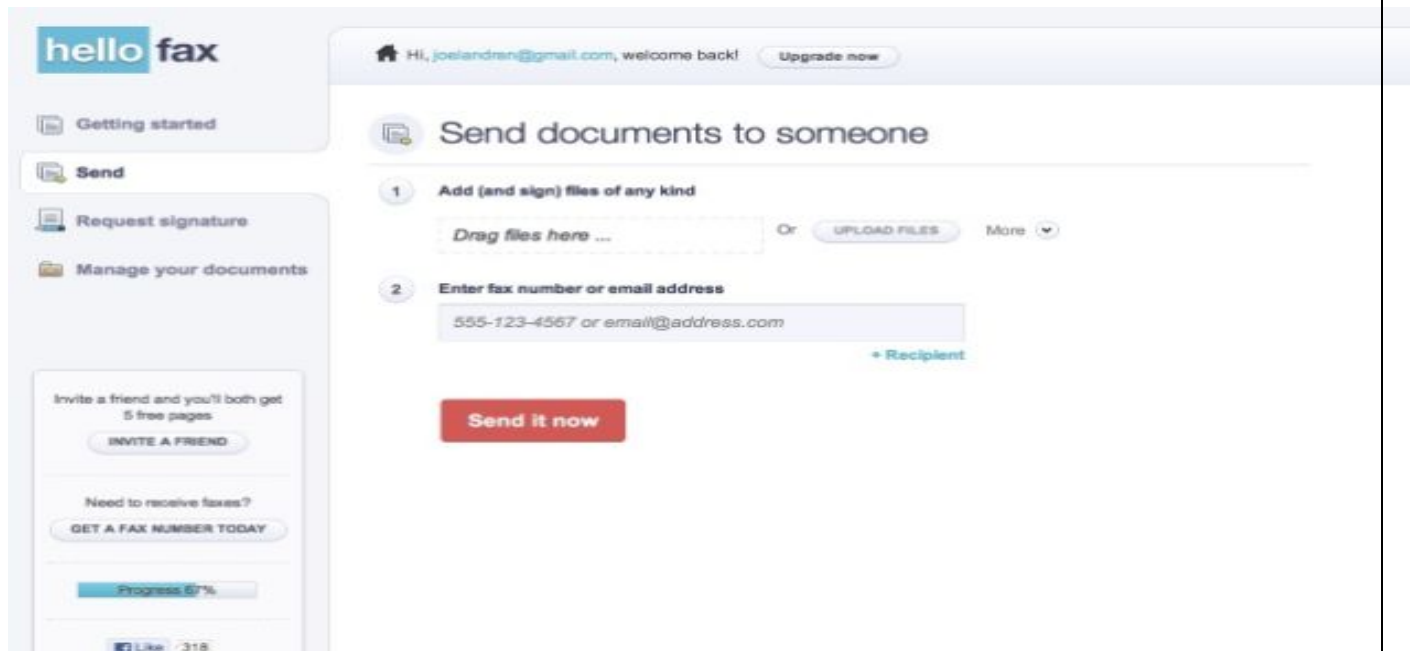
HelloFax isn't the only service to send faxes online, but its tight integration with Google Drive makes it incredibly easy to use.

With HelloFax installed, every fax you send with the service is linked directly into Drive. Need to fax some forms? Send them from Drive. Waiting on a fax? HelloFax will stuff it right into your Drive folder so you can access it from anywhere. Most of us only need a fax machine on rare occasions and HelloFax is a handy alternative to a big clunky machine.

Edit Photos Right in Your Browser with Pixlr Editor and Aviary

Both Pixlr Editor and Aviary are simple, but useful photo editing tools for Google Drive that work right in your browser.
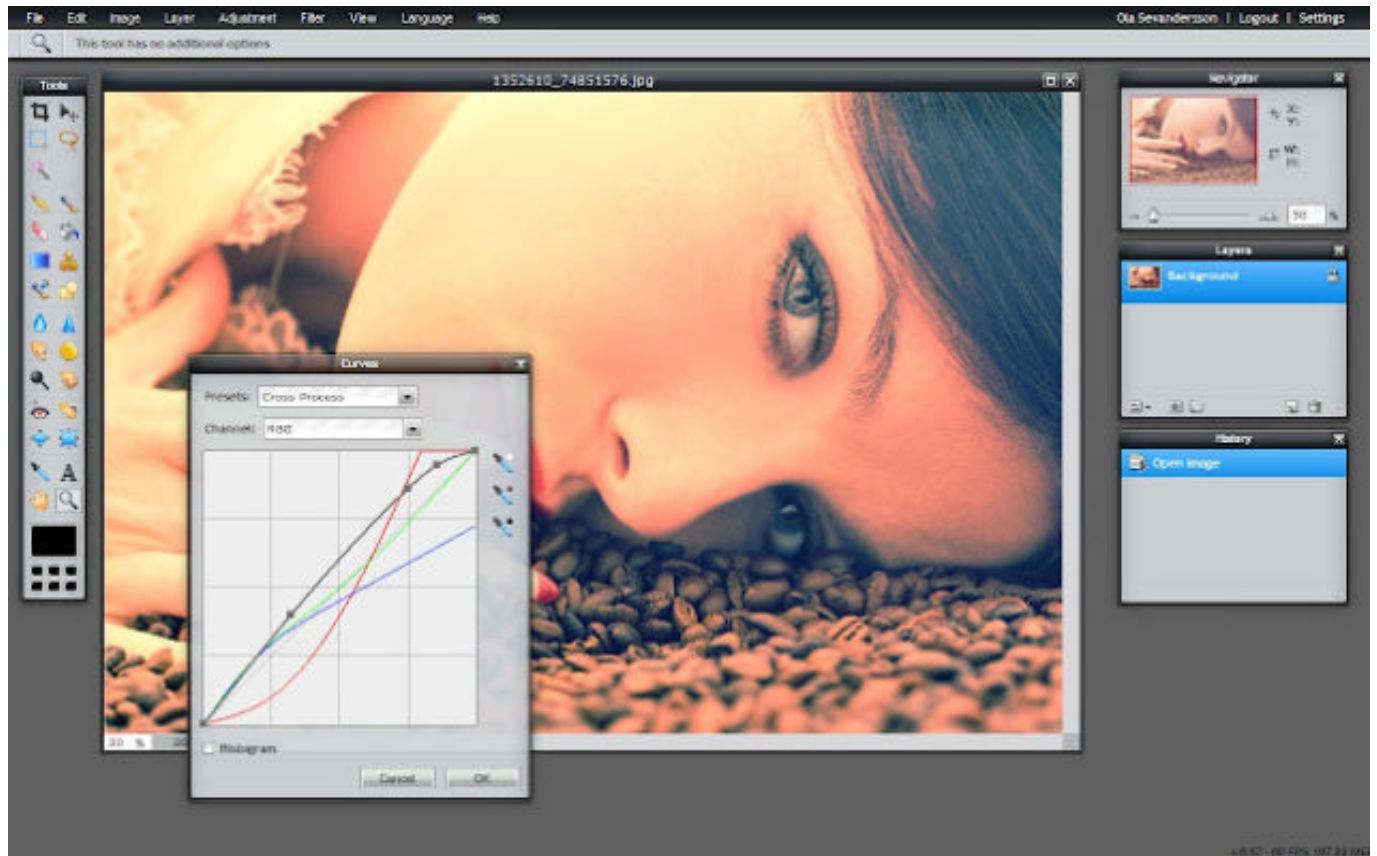
If you're looking for a photo editing app similar in function to Photoshop, Pixlr Editor feature set makes it a pretty good choice. Pixlr Editor doesn't have the abundance of tools as Photoshop, but as a free cloud photo editing tool it works great.

If light touch-ups to photos are more your thing, then Aviary is all you need. Upload your photos into your Google Drive and you can make simple edits like color balance, and blemish correction right inside Drive.

CREATING A SIMPLE CRYSTAL REPORT

Mr. B. SRINIVASAN
ASST. PROFESSOR IN COMPUTER SCIENCE

What is Crystal Report?

Crystal Report is a database reporting application. It has powerful capabilities to access and analyze various sources of data for its report.

Steps in Making Crystal Report

1. Create a new project.(.Net)

2. Add a CrystalReportViewer to your WebForm.
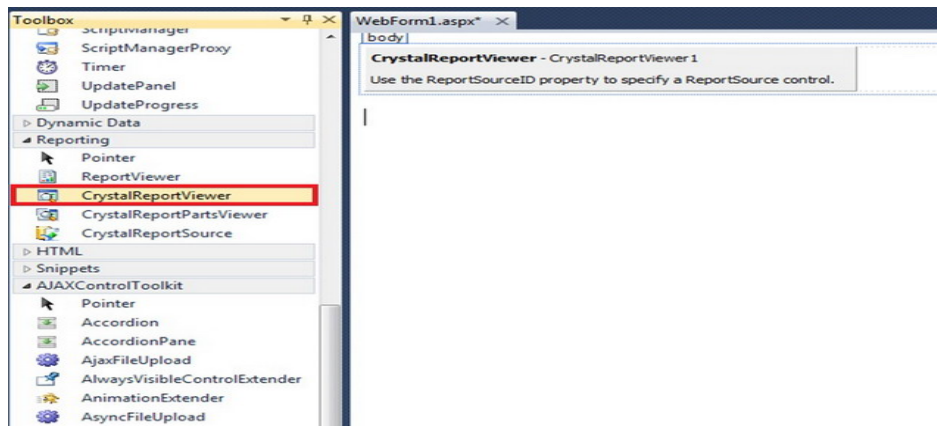
Select the project name and then perform the following:

1. Add New Item

2. Select Report and then select Crystal Report

3. Save your File as "StudentList.rpt"

Just close the dialog box that appear or select Blank Report
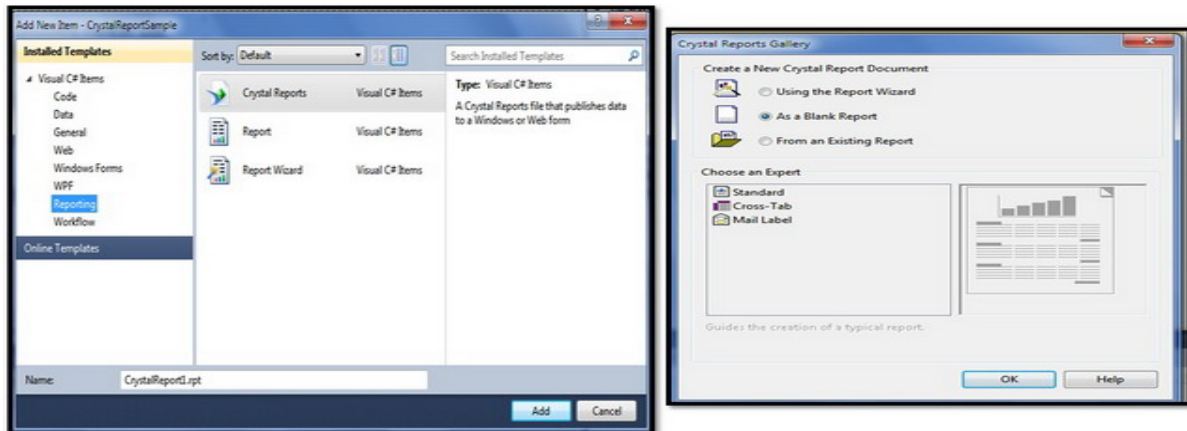
A Blank report will be created.
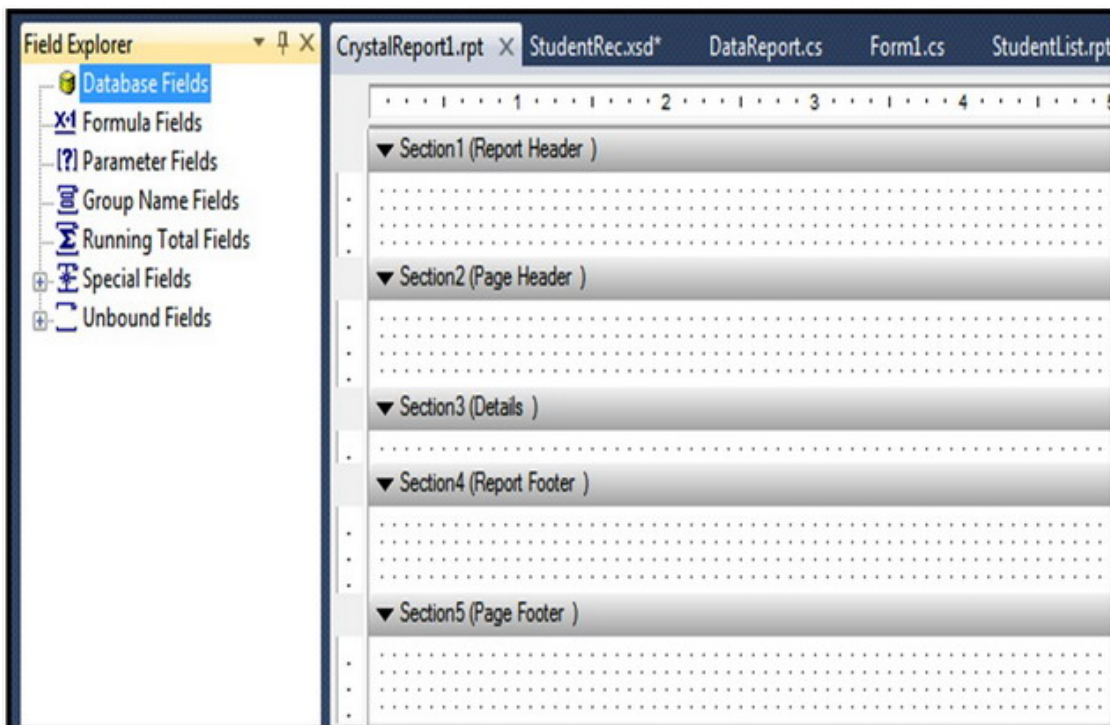
Now, select the project name and then perform the following:

1. Add New Item

2. Select DataSet

3. Save your DataSet as "StudentRec.xsd"

4. Drag a table from your Sever Explorer going to your DataSet designer.
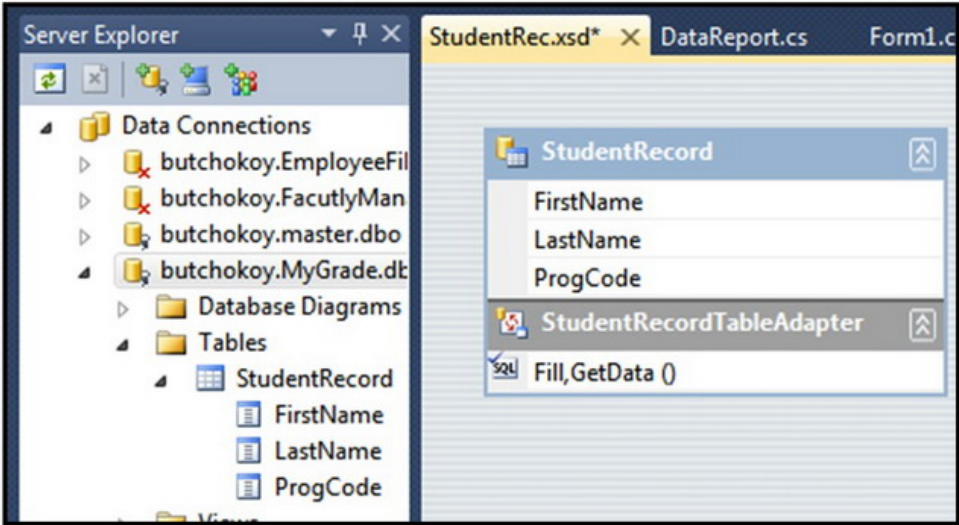
Go back to CrystalReport.rpt.

HUB OF KNOWLEDGE
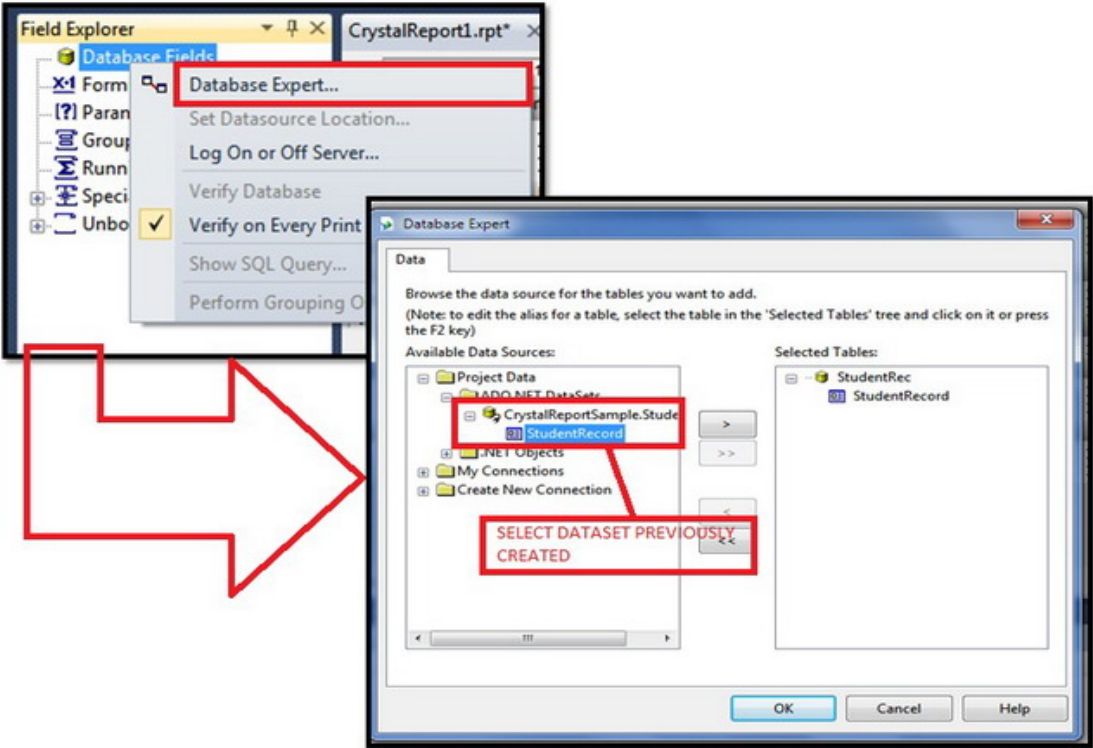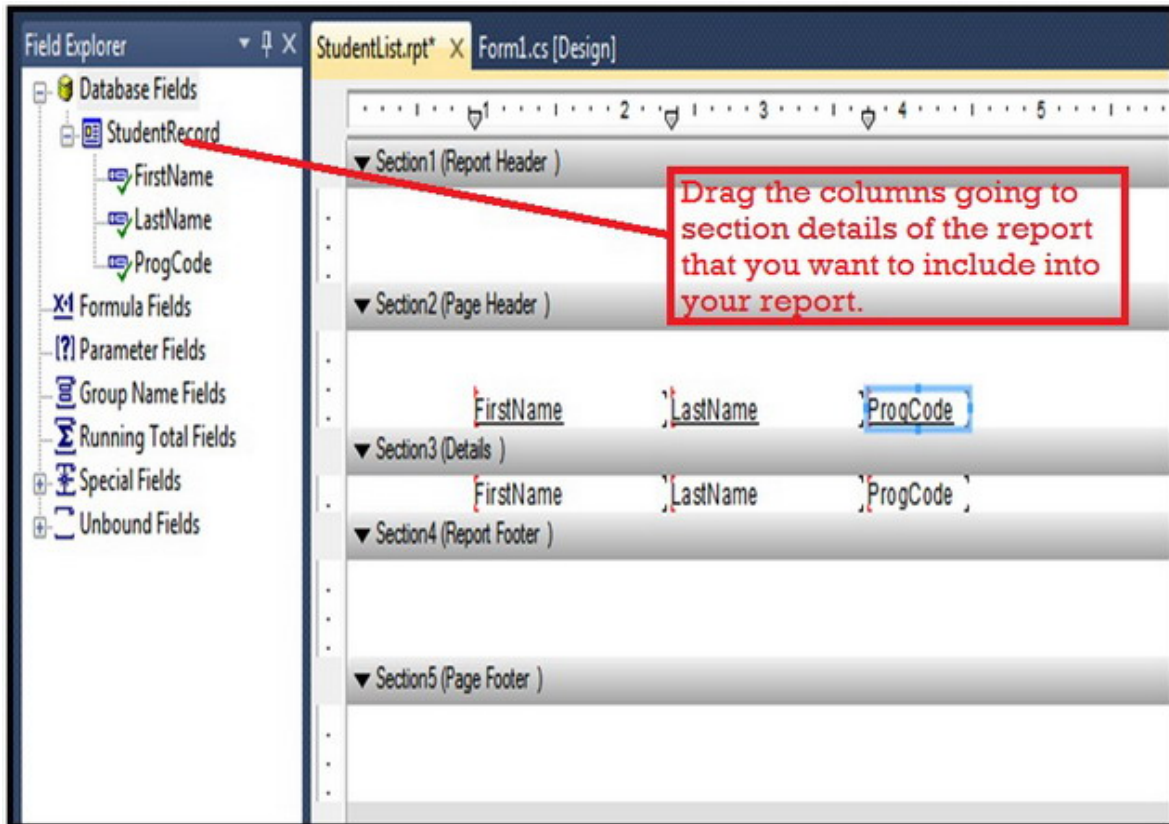
Create a class Library and named it as "ReportHelper" and then rename the

Class as "DataReport" and then write the following **code** below:

using System.text;

using System.Data;

using System.Data.SqlClient;

namespace ReportHelper

{

  public class DataReport

  {

    private static string _connString = @"Data Source";

     public static DataSet LoadReport()

```
    {

        SqlConnection myConn = new SqlConnection(_connString);

        SqlDataAdapter da = new SqlDataAdapter("Select * from
StudentRecord", myConn);

        DataSet ds = new DataSet();

        da.Fill(ds, "StudTable");

        return ds;

    }

  }

}
```

On Page_Load event write the following code and then run your application.

```
using System;

using System.Collections.Generic;

using System.Linq;

using System.Web;

using System.Web.UI;

using System.Web.UI.WebControls;

using ReportHelper;

using System.Data;

using System.Data.SqlClient;


namespace CrystalReport

{
```

```
public partial class WebForm1 : System.Web.UI.Page   {

    protected void Page_Load(object sender, EventArgs e)

    {

        DataView dview = new DataView();

        dview.Table = DataReport.LoadReport().Tables["StudTable"];


        StudentList myreport = new StudentList();

        myreport.SetDataSource(dview)

        CrystalReportViewer1.ReportSource = myreport;

        CrystalReportViewer1.DataBind();

    }

  }

}
```

Advantages:

1. Secure as End user cannot modify the data which is appear in the report if we use crystal report to show the report.

2. Report layout is not transparent, so that end user will not know about how we design the report.

3. Can export into different format like PDF, HTML, XML, etc.,

Disadvantages:

1. End user need to have the crystal report viewer in his PC in order to see the crystal report output. But this can be overcome if you export the report as PDF/HTML.

2. You need to buy Crystal Report license for each pc you are used to design the crystal report.

3. Must buy the version which allows you to install run time components in end user PC.

VIRTUALIZATION – HELP CARRIERS SERVING NEW DEVICES AND DEMANDS

Ms. M. MENAKA
ASST. PROFESSOR IN COMPUTER SCIENCE

Changes starting to take place behind the scenes in mobile networks may eventually pay dividends to anyone with a smartphone, a connected refrigerator or an IT department.

Carriers have done things pretty much the same way for years, with cellular base stations at the edge of their networks feeding into a series of specialized appliances at central facilities. Now they're virtualizing those networks in several ways, seeking the same rewards that enterprises have reaped by virtualizing data centers: efficiency and flexibility.

It's good news for mobile users that they may not hear much about. A more efficient network leaves more free capacity for the video or application you want to run, and a more flexible carrier could quickly launch services in the future that you don't even know you'll need yet. The new architectures may even change how some businesses pay for mobile services.

Just as enterprises used to buy separate servers for each application, carriers often use dedicated hardware for each function involved in delivering a service, such as billing and authentication. Years of mergers have left multiple legacy platforms, adding to the mess. As a result, rolling out a new service for a customer, such as a VPN, can take weeks.

The new approach that's gaining ground, called NFV (network functions virtualization), turns each piece of the puzzle into software that can run on standard computing hardware.

NFV is a pretty well accepted idea now, though it may take years to be implemented in carrier networks. Companies such as Cisco Systems, Oracle, and the team of Nokia and HP are now tackling the next challenge: making those entire virtualized network functions work together as a coherent system instead of separate applications. They say getting all the speed and efficiency out of NFV means going deeper than hardware consolidation.

"Virtualized chaos is still chaos," said Kelly Ahuja, Cisco's senior vice president of service provider products and solutions.

As NFV becomes a well-oiled machine, it should help carriers operate more like cloud computing providers and also develop entirely new kinds of services. The Internet of Things may demand it.

A Comparison made in the carrier network of the future to a hotel where customers will buy services for a short time instead of signing up for long contracts. All the cells, towers and wires in the network would stick around, but the carrier would spin up the bandwidth and other resources for a particular customer on demand.

For example, an electric utility that needs to poll millions of wireless smart meters at a certain time, but not connect to them constantly, could pay a carrier to provision a short-term service that collects data from the meters. Once the utility was finished with the service, all the network and computing resources would be available for the next customer.

Because of cloud computing and storage, retailers and some other companies have gotten used to paying only for what they need, said by some analyst. They'll start seeking the same thing from mobile operators. "The only reason this isn't a huge issue right now is that not everybody's bought into the cloud,"

As IoT leads people to use mobile networks in new ways, virtualization should make carriers more like Web companies, able to roll out totally new services with less effort.

For example, services like AT&T Digital Life, which lets subscribers manage smart appliances around their homes, are far different from the one-user and one-device plans that carriers are used to rolling out and there will be more of these in the coming years.

Even cells are going virtual. A set of technologies called C-RAN (Cloud Radio Access Network) lets operators place different components of a cell in different locations, centralizing some and leaving others on a tower or rooftop. This can cut costs and may also help the carrier serve customers better, another census.

For example, instead of each cell operating independently, several of them can be linked at high speed to one system that handles some functions for all the cells in the area. This lets the carrier better coordinate the cells, balancing the traffic load among them and improving service for subscribers.

"Providers optimize network performance based on the end-user experience and not at the cell level".

Ultimately, the virtualization trends may meet, and each function will take place in the best possible part of the network, "Core and RAN come together, and they can be optimized at the same time."

TOP 5 NETWORK ROUTING PROTOCOLS

Ms. A. NIRMALA DEVI
ASST. PROFESSOR IN COMPUTER SCIENCE

Hundreds of different network protocols have been created for supporting communication between computers and other types of electronic devices. So-called routing protocols are the family of network

protocols that enable computer routers to communicate with each other and in turn to intelligently forward traffic between their respective networks. The protocols described below each enable this critical function of routers and computer networking.

How Routing Protocols Work

Every network routing protocol performs three basic functions:

1. *discovery* - identify other routers on the network

2. *route management* - keep track of all the possible destinations (for network messages) along with some data describing the pathway of each

3. *path determination* - make dynamic decisions for where to send each network message

A few routing protocols(called *link state protocols*) enable a router to build and track a full map of all network links in a region while others (called *distance vector protocols)* allow routers to work with less information about the network area.

1. RIP

Researchers developed **Routing Information Protocol** in the 1980s for use on small- or medium-sized internal networks that connected to the early Internet. RIP is capable of routing messages across networks up to a maximum of 15 hops.

RIP-enabled routers discover the network by first sending a message requesting router tables from neighboring devices. Neighbor routers running RIP respond by sending the full routing tables back to the

requestor, whereupon the requestor follows an algorithm to merge all of these updates into its own table. At scheduled intervals, RIP routers then periodically send out their router tables to their neighbors so that any changes can be propagated across the network.

Traditional RIP supported only IPv4 networks but the newer RIPng standard also supports IPv6. RIP utilizes either UDP ports 520 or 521 (RIPng) for its communication.

2. OSPF

Open Shortest Path First was created to overcome some of its limitations of RIP including

- The 15 hop count restriction
- The inability to organize networks into a routing hierarchy, important for manageability and performance on large internal networks
- The significant spikes of network traffic generated by repeatedly re-sending full router tables at scheduled intervals.

As the name suggests, OSPF is an open public standard with widespread adoption across many industry vendors. OSPF-enabled routers discover the network by sending identification messages to each other followed by messages that capture specific routing items rather than the entire routing table. It is the only link state routing protocol listed in this category.

3. EIGRP and IGRP

Cisco developed **Internet Gateway Routing Protocol** as another alternative to RIP. The newer **Enhanced IGRP** (EIGRP) made IGRP obsolete starting in the 1990s. EIGRP supports classless IP subnets and improves the efficiency of the routing algorithms compared to older IGRP. It does not support routing hierarchies, like RIP. It is originally created as a proprietary protocol runnable only on Cisco family devices. EIGRP was designed with the goals of easier configuration and better performance than OSPF.

4. IS-IS

The **Intermediate System to Intermediate System** protocol functions similarly to OSPF. While OSPF became the more popular choice overall, IS-IS remains in widespread use by service providers who have benefitted from the protocol being more easily adaptable to their specialized environments. Unlike the other protocols in this category, IS-IS does not run over Internet Protocol (IP) and uses its own addressing scheme.

5. BGP and EGP

The **Border Gateway Protocol** is the Internet standard External Gateway Protocol (EGP). BGP detects modifications to routing tables and selectively communicates those changes to other routers over TCP/IP.

Internet providers commonly use BGP to join their networks together. Additionally, larger business sometimes also use BGP to join together multiple of their internal networks. Professionals consider BGP

the most challenging of all routing protocols to master due to its configuration complexity.

HANDS ON:VLC 2.4.1 (IOS)

M. KALKI
I BCA 'C'

VLC has famously been on and off the APP store but it's back now and looks likely to stay because the developer is promising another major update besides this week's soon. Nonetheless, don't wait: grab this video player while you definitely can.

We're talking about the VLC for IOS: there are version of it for Mac and PC that have been around and enjoyed for years without any disappearances the main reason VLC left the APP store was an issue to do with rights and that's all resolved and will presumably stay resolved. Still, VLC for IOS came back a few weeks ago for users who already add it. Now it's back for new users in America but only patchily for international customers.

Go to the App Store and if you can see VLC player for IOS version 2.4.1 get it.

All this app does is play video and audio. What makes it useful is that, it plays formats that iTunes won't. More or less any type of video will

play in VLC so if you can get the footage onto your i-pad, you can now watch it.

When VLC first appeared and before it first disappeared, they way to do that was plug your ios device into your MAC and use iTune application page. You still can go to that section of iTunes, scroll down below the main list of apps you have and find a smaller list of apps you can load documents into. Drag videos on to the VLC icons in that list and you're away.

However, things are much more straight forward and easy now. Today you can pop videos on to dropbox or google box or open them into VLC from there. There are also more complex ways to getting video such as downloading it directly when you know the address and are creating a local network to share everything. But Dropbox and drive make it painfully simple, if speeds limited by upload bandwidth to load up your i-pad with video before you head out on the long journey.

We did get VLC back before the dark days on its vanishing and over the years we've used it for speed ,convenience and how the video files it plays can be much smaller than those in iTunes. Working with PC users on a video project, for instance, they could send as whatever arcane format windows likes and we need just watch it in VLC.

Most recently we judged some video awards and while every entrant submitted their work on VVD—which seems adorably quaint now—we could rip the lot and pop everyone onto our ipad for viewing. Pictures using a cottage in France, feet up on a hot day with a cold drink and countless hours of broadcast television to watch. We could've ripped the

DVD to MP4 that iTunes likes and it may well have all looked better but we physically could not have held all that television.

VLC isn't as smooth as iTunes: it sometimes feels like the port of a windows app that it is. We have had little oddities like it not responding to the keyboard when renaming a video unless you tapped the delete icon first. Playback is also not as good as in iTunes but that will be less VLC's fault and more that it will play low-quality videos.

More typically of a windows app, it comes with a lot of option for finding with the settings and we've not once used any of them mind you. If we, ever really fancy watching videos at twice normal speed, we know where to go.

Settings and oddities and rough edges mean that VLC is not our go-to video player for everything .We still prefer iTunes and the i-Pad's video app plus of course we spend far too much money buying films from APPLE and there's no reasons to try converting them to play in VLC has become a Swiss army knife kind of solution. If you're on the road and you need to watch something, VLC will play it.

There is this promised update coming soon that will take VLC from version 2.4.1 to 3.the chief improvements will be the addition of more video formats that the app can play. Doubtlessly, we'll be getting it because the current one is so useful but in the meantime, current edition and start using it now.

VLC 2.4.1 for:

Certainly video editors who have footage to watch ,definitely anyone working with PC users and their videos ,but really just anyone whoever needs to see a non-tunes video on their IOS device.

K.R. SRIDHAR – THE INVENTOR OF BLOOM BOX, THE HOLY GRAIL OF CLEAN ENERGY

Ms. S. GOWRI
ASST. PROFESSOR IN COMPUTER SCIENCE

Dr. K. R. Sridhar is a man of many talents: a true Indian Scholar, Nuclear Physicist, Professor of Aerospace and Mechanical Engineering, innovator, entrepreneur and, a passionate futurist who envisions a self-reliant world. Currently, serving as the principal Co-founder and CEO of Bloom Energy, his innovation, the Bloom Box, has been widely regarded as the "Holy Grail" of clean energy.

Born in India, in 1960, Sridhar completed his B.Tech in Mechanical Engineering from National Institute of Technology, Tiruchirappalli under the University of Madras. On completion, he moved to the United States to

complete an M.S. and Ph.D. in Nuclear Engineering at the University of Illinois.

After graduating from the university, in 1990, he started his career at the University of Arizona sponsored Space Technologies Laboratory (STL) and was soon promoted to the post of the Director.

In 1994, Dr. Sridhar joined NASA to develop a device that could convert water into oxygen for their futuristic Mars mission. Over the next seven years, he led the team of scientists and engineers that successfully developed a device that used solar power and water extracted from the planets and subsequently powered a reactor cell that produced oxygen to breathe and hydrogen to power machines and vehicles. Unfortunately, he could never see his device being used on NASA's Mars Surveyor 2001 Lander mission. The mission was cancelled for some technical reasons.

Instead of getting disheartened, Dr. Sridhar got a unique idea – he decided to reverse the process and use oxygen and hydrogen to create power, the electricity. In 2001, he founded a company called Ion America to develop fuel-cell technology that could generate eco-friendly electricity at highly inexpensive prices. In less than 3 years, Sridhar managed to raise $400 million through venture capital. In 2002, he shifted the company center to the NASA Ames Research Center; and in 2006, he renamed the company to Bloom Energy and called his fuel cells the 'Bloom Box'.

The Bloom Box Technology

According to Dr. Sridhar, a Bloom Box comprises of some fuel cells or skinny square-like batteries that use oxygen and fuel to generate electricity with zero emissions. The fuel cells are primarily made of sea sand that is

baked and molded into ceramic squares and then painted with black and green ink on the both sides. Each fuel cell is so powerful that it can light a 40 watt bulb. The fuel cells are then stacked in a metal box sandwiched with metal alloy plates. Finally the power boxes are housed in refrigerator-like large boxes that are called the Bloom Box. Finally, to generate electricity, the box is supplied with the oxygen is supplied from one side and fuel (it could be anything the fossil-fuel, bio-fuel, or solar power) is fed from the other side. When they combine, they create a chemical reaction and thus electricity is generated without any pollution or noise.

Bloom stated that two hundred servers have been deployed in California for corporations including eBay, Google, Yahoo, and Wal-Mart.

ARTIFICIAL INTELLIGENCE

Ms. P. DEEPALAKSHMI
ASST. PROFESSOR IN COMPUTER SCIENCE
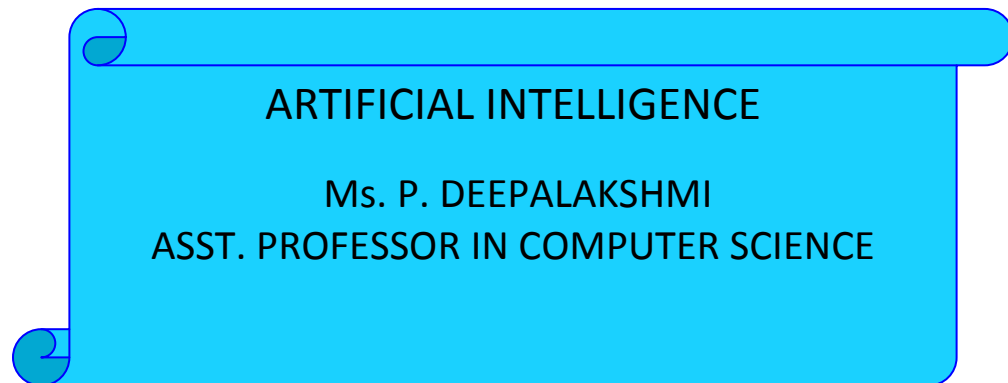
Introduction:

Computers are found everywhere in today's world. Everyone uses a computer. Computers have become more personal as they are used like common household items, and more people interact with computers at a personal level. The software that runs the computer needs to interact more easily with its environment and its human users.   With   today's   ever

accelerating advances in science and technology it is becoming increasingly achievable. It will then be possible to build artificial machines whose intelligence match, and possibly even exceeds, that of humans. The study of artificial intelligence has provided better programming techniques for building smarter computer systems.
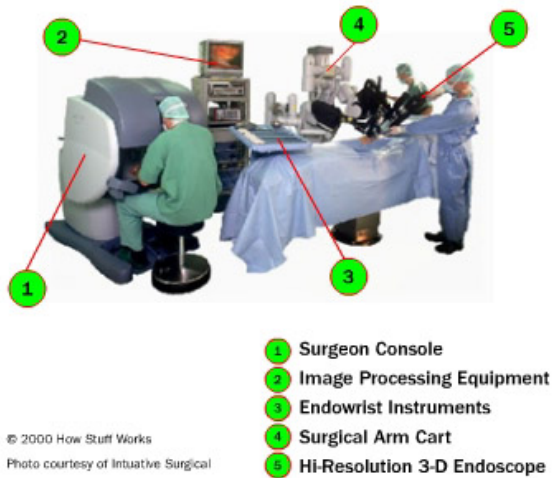
Robotics:

Overview:

Robotics is the science and technology of robots, their design, manufacture, and application. Robotics requires a working knowledge of electronics, mechanics, and software. A person working in the field is a robotist.

How to solve problems:

The basic idea of AI problem-solving is very simple, though its execution is complicated. First, the AI robot or computer gathers facts about a situation through sensors or human input. The computer compares this information to stored data and decides what the information signifies. The computer runs through various possible actions and predicts which action will be most successful based on the collected information. Some modern robots also have the ability to learn in a limited capacity. Learning robots recognize if a certain action (moving its legs in a certain way, for instance) achieved a desired result (navigating an obstacle). The robot stores this information and attempts the successful action the next time it encounters the same situation. Again, modern computers can only do this in very limited situations. They can't absorb any sort of information like a human can.

Robotic Surgeons:

Surgeon Console
Image Processing Equipment
Endowrist Instruments
Surgical Arm Cart
Hi-Resolution 3-D Endoscope

© 2000 How Stuff Works
Photo courtesy of Intuative Surgical

These machines still require a human surgeon to operate them and input instructions. Remote control and voice activation are the methods by which these surgical robots are controlled.

Sitting at the control console, a few feet from the operating table, the surgeon looks into a viewfinder to examine the 3-D images being sent by the camera inside the patient. The images show the surgical site and the two surgical instruments mounted on the tips of two of the rods. Joystick-like controls, located just underneath the screen, are used by the surgeon to manipulate the surgical instruments. Each time one of the joysticks is moved, a computer sends an electronic signal to one of the instruments, which moves in sync with the movements of the surgeon's hands.

Robots have enabled us to see places that humans are not yet able to such as other planets and the depths of the ocean.

Automatic number plate recognition:

Automatic number plate recognition (ANPR) is a method that uses optical character recognition on images to read the license plates on vehicles. As of 2006, systems can scan number plates at around one per second on cars traveling up to 100 mph (160 km/h). They can use existing road-rule enforcement cameras, or ones specifically designed for the task. They are

used by various police forces and as a method of electronic toll collection on pay-per-use roads, and monitoring traffic activity.

ANPR can be used to store the images captured by the cameras as well as the text from the license plate, with some configurable to store a photograph of the driver. Systems commonly use infrared lighting to allow the camera to take the picture at any time of day. A powerful flash is included in at least one version of the intersection-monitoring cameras, serving to both illuminate the picture and make the offender aware of his or her mistake. ANPR technology tends to be region specific, owing to plate variation from place to place.

DIFFICULTIES:

There are a number of possible difficulties that the software must be able to cope with. These include:

- ➢ Poor image resolution, usually because the plate is too far away but sometimes resulting from the use of a low-quality camera.
- ➢ Blurry images, particularly motion blur
- ➢ Poor lighting and low contrast due to overexposure, reflection or shadows
- ➢ An object obscuring (part of) the plate, quite often a tow bar, or dirt on the plate
- ➢ A different font, popular for vanity plates (some countries do not allow such plates, eliminating the problem)
- ➢ Circumvention techniques

Traffic control:

Many cities and districts have developed traffic control systems to help monitor the movement and flow of vehicles around the road network. This had typically involved looking at historical data, estimates, observations and statistics such as

- ➢ Car park usage
- ➢ Pedestrian crossing usage
- ➢ Number of vehicles along a road
- ➢ Areas of low and high congestion
- ➢ Frequency, location and cause of road works
- ➢ Electronic toll collection

Toll roads:

The highway roads use a combination of ANPR and radio transponders to toll vehicles entering and exiting the road. Radio antennas are located at each junction and detect the transponders, logging the unique identity of each vehicle in much the same way as the ANPR system does. Without ANPR as a second system it would not be possible to monitor all the traffic. Drivers who opt to rent a transponder for C$2.00 per month are not charged the "Video Toll Charge" of C$3.45 for using the road, with heavy vehicles (those with a gross weight of over 5,000 kg)

being required to use one. Using either system, users of the highway are notified of the usage charges by post.

There are numerous other electronic toll collection networks which use this combination of Radio frequency identification and ANPR.

Three Laws of Robotics:

The Laws state the following

➢ A robot may not injure a human being or, through inaction, allow a human being to come to harm.

➢ A robot must obey orders given to it by human beings except where such orders would conflict with the First Law.

➢ A robot must protect its own existence as long as such protection does not conflict with the First or Second Law

Today's Achievements in Artificial Intelligence:

The 800 million EUREKA's Project on driverless cars showed that fast autonomous vehicles can drive long distances (over 100 miles) in traffic, automatically recognizing and tracking other cars through computer vision, passing slower cars in the left lane. But the challenge of safe door-to-door autonomous driving in arbitrary environments will require additional research.

The DARPA Grand Challenge was a race for a $2 million prize where cars had to drive themselves over a hundred miles of challenging desert terrain without any communication with humans with the use of a sophisticated array of sensors. The winning vehicles completed all 132 miles of the course in just less than seven hours.

RESEARCH CHALLENGES RELATED TO CLOUD COMPUTING

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Definition

Cloud computing has recently emerged as a new paradigm for hosting and delivering services over the Internet. In other words, it is a new computing model, in which resources such as CPU , Storage are provided as general utilities that can be leased and released by users through the Internet in an on-demand fashion.

Features of Cloud Computing

- No up-front investment
- Lowering operating cost:
- Highly scalable
- Easy access
- Reducing business risks and maintenance expenses

Related Technologies

- Grid Computing:
- Utility Computing
- Autonomic Computing

Cloud Computing Architecture

- The Hardware Layer
- The Infrastructure Layer
- The Platform Layer
- The Application Layer

Cloud Services

- Infrastructure as a Service
- Platform as a Service
- Software as a Service

Types of Clouds

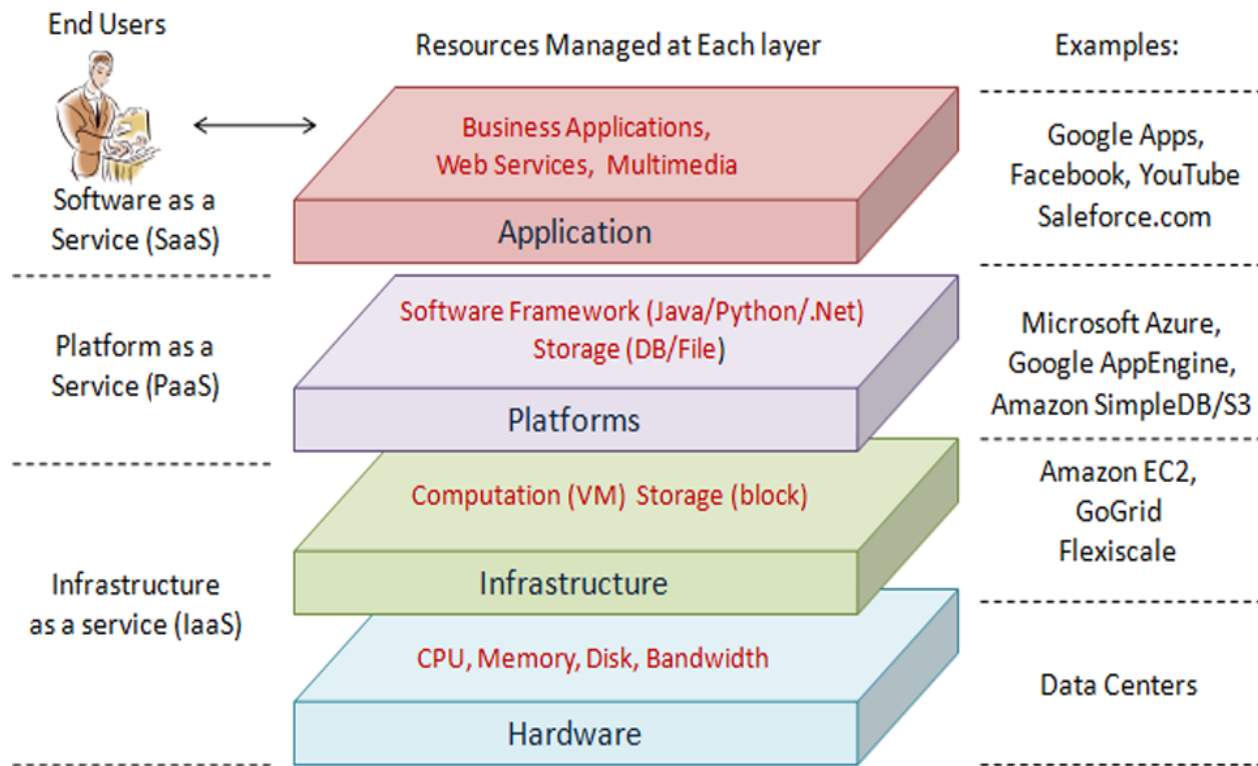- Public clouds
- Private clouds
- Hybrid clouds

Cloud computing characteristics

- Multi-tenancy
- Shared resource pooling
- Geo-distribution and ubiquitous network access
- Service oriented
- Dynamic resource provisioning
- Self-organizing

Commercial products

- Amazon EC2
- Microsoft Windows Azure platform
- Google App Engine

Research Areas Related to Cloud Computing

- Automated service provisioning

- Virtual machine migration

- Server consolidation

- Energy management

- Traffic management and analysis

- Data security

- Software frameworks

- Storage technologies and data management

- Novel cloud architectures

3D INTERNET

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Also known as virtual worlds, the **3D Internet** is a powerful new way for you to reach consumers, business customers, co-workers, partners, and students. It combines the immediacy of television, the versatile content of the Web, and the relationship-building strengths of social networking sites like *Facebook*. Yet unlike the passive experience of television, the **3D Internet** is inherently interactive and engaging. Virtual worlds provide immersive 3D experiences that replicate (and in some cases exceed) real life.

People who take part in virtual worlds stay online longer with a heightened level of interest. To take advantage of that interest, diverse businesses and organizations have claimed an early stake in this fast-growing market. They include technology leaders such as **IBM, Microsoft, and Cisco, companies such as BMW, Toyota, Circuit City, Coca Cola, and Calvin Klein, and scores of universities,** including **Harvard, Stanford and Penn State.**

Introduction of 3D Internet

The success of 3D communities and mapping applications, combined with the falling costs of producing 3D environments, are leading some analysts to predict that a dramatic shift is taking place in the way people see and navigate the Internet.

The appeal of 3D worlds to consumers and vendors lies in the level of immersion that the programs offer.

The experience of interacting with another character in a 3D environment, as opposed to a screen name or a flat image, adds new appeal to the act of socializing on the Internet.

Advertisements in Microsoft's Virtual Earth *3D mapping* application are placed as billboards and signs on top of buildings, blending in with the application's urban landscapes.

3D worlds also hold benefits beyond simple social interactions. Companies that specialize in interior design or furniture showrooms, where users want to view entire rooms from a variety of angles and perspectives, will be able to offer customized models through users' *homePCs* .

Google representatives report that the company Google is preparing a new revolutionary product called Google Goggles, an interactive visor that will present Internet content in three dimensions. Apparently the

recent rumors of a Google phone refers to a product that is much more innovative than the recent Apple iPhone.

Google's new three dimensional virtual reality:

Anyone putting on "the Goggles" - as the insiders call them - will be immersed in a three dimensional "stereo-vision" virtual reality called 3dLife. 3dLife is a pun referring to the three dimensional nature of the interface, but also a reference to the increasingly popular Second Life virtual reality.

The "home page" of 3dLife is called "the Library", a virtual room with virtual books categorized according to the Dewey system. Each book presents a knowledge resource within 3dLife or on the regular World Wide Web. If you pick the book for Pandia, Google will open the Pandia Web site within the frame of a virtual painting hanging on the wall in the virtual library. However, Google admits that many users may find this too complicated. Apparently Google is preparing a new revolutionary product called Google Goggles, an interactive visor which will display Internet content in three dimensions.

A 3D mouse lets you move effortlessly in all dimensions. Move the 3D mouse controller cap to zoom, pan and rotate simultaneously. The 3D mouse is

a virtual extension of your body - and the ideal way to navigate virtual worlds like Second Life.

The Space Navigator is designed for precise control over 3D objects in virtual worlds. Move, fly and build effortlessly without having to think about keyboard commands, which makes the experience more lifelike.

Controlling your avatar with this 3D mouse is fluid and effortless. Walk or fly spontaneously, with ease. In fly cam mode you just move the cap in all directions to fly over the landscape and through the virtual world

Hands on: Exit Reality:

The idea behind ExitReality is that when browsing the web in the old-n-busted 2D version you're undoubtedly using now, you can hit a button to magically transform the site into a 3D environment that you can walk around in and virtually socialize with other users visiting the same site. This shares many of the same goals as Google's Lively (which, so far, doesn't seem so lively), though ExitReality is admittedly attempting a few other tricks.

Installation is performed via an executable file which places ExitReality shortcuts in Quick Launch and on the desktop, but somehow forgets to add the necessary ExitReality button to *Firefox's toolbar* . After adding the button manually and repeatedly being told our current version was out of date, we were ready to 3D-ify some websites and see just how much of reality we could leave in two-dimensional dust.

Exit Reality is designed to offer different kinds of 3D environments that center around spacious rooms that users can explore and customize, but it can also turn some sites like Flickr into virtual museums, hanging photos on virtual walls and halls. Strangely, it's treating Ars Technical as an image gallery and presenting it as a malformed *3D gallery* .

3D Shopping:

3D Shopping is the most effective way to shop online. 3DInternet dedicated years of research and development and has developed the worlds' first fully functional, interactive and collaborative shopping mall where online users can use our 3DInternet's Hyper-Reality technology to navigate and immerse themselves in a Virtual Shopping Environment. Unlike real life, you won't get tired running around a mall looking for that perfect gift; you won't have to worry about your kids getting lost in the crowd; and you can finally say goodbye to waiting in long lines to check out.

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Telegram

Telegram was launched in 2013 by brothers Nikolai and Pavel Durov, the founders of Russian VK,Russia's largest social network.