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STUDENT RESEARCH CONFERENCE, ENGLISH LANGUAGE, 13 MAY 2008

FACULTY OF NATURAL SCIENCES
UNIVERSITY OF SS CYRIL AND METHODIUS IN TRNAVA

Title of Project: **The Linux/GNU Project**

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Year of study: Second

Study program: Informatics

Abstract

These days the problems of *free software* and *non-free software* are a well discussed theme. *But what is free software in general ?*

For me the answer is simply that it is a software that is being produced from a programmer for the public, for no charge. This is an important fact that many people cannot see. They think that this free software is just some kind of an unfinished program, or that it is not so effective as the non-free software. These facts are mostly not true, but *the public just does not pay so much attention to the free software as it does to the non-free software*. If projects similar to mine can help the publicity to acknowledge the importance and usability of free software, it would help the reputation of free software and to the development of software in general.

My project contains a look into the world of free software, mainly the GNU/Linux Project. By making of this project, there were some major differences between free and non-free software that were very exciting. These have been chosen to be a part of my project as well.

In the beginning of my project, the *definition of free software together with the definition of the GNU/Linux Project* has been explained. These definitions, also known as freedoms, are the keystone for every free software. If a software does not fulfill all of these definitions, then it cannot be considered a free software. Then various distributions of GNU/Linux Project based operating systems are shown, followed by the major question of *Why software should not have owners ?*. Here lies the main difference between free and non-free software. In the end there is *Quo vadis (Where are we heading)* about the future of free software and non-free software.

Not everyone will like free software, because it often requires higher programming skills than the usual non-free software. But projects like this could at least inspire people to change their opinion about free software and they should will give it a try.

Key words: free software, non-free software, GNU/Linux Project

References:

1. GNU Operating System, <http://www.gnu.org/>
2. Linux.sk, <http://www.linux.sk/>
3. Free software foundation <http://www.fsf.org/campaigns/>

FACULTY OF NATURAL SCIENCES
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Title of Project: **Computer Viruses**

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Abstract

Computer viruses are called viruses because they share some of the traits of biological viruses. A computer virus passes from computer to computer like a biological virus passes from person to person.

We know many types of viruses, such as *worms*, *Trojan horses*, or *e-mail viruses*. These viruses when activated by clicking on an email, running application, or visiting a website can destroy data or hardware as well as send email messages without the sender's agreement. There are many people who create viruses either of famous or just for a thrill, and these people will never vanish.

But as people use medicines to protect their bodies against viruses, that way computers uses antivirus programs to protect themselves. Naturally, a computer needs a person to install that program.

This means that viruses are still stronger and more dangerous, but on other hand, antivirus programs are still more intelligent, and more effective.

If you have any questions, please ask them on ŠVK, Thursday 13th May in class S3.5.

Keywords: virus, antivirus, Internet, e-mail, damage

References:

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2. ESET, spol. s.r.o, <http://www.eset.sk>
3. PC Revue, http://www.pcrevue.sk/buxus_dev/generate_page.php?page_id=2405

FACULTY OF NATURAL SCIENCES
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Title of Project: **Microbes in Use**

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Study program: Biotechnology

Abstract

The project deals with all the major and important details to be thought of microbes in use. This article is divided into small parts. In one of these parts I described all the important theoretical resources as well as methods being used when obtaining information about all important functions and use of microorganisms. In the next parts, I described the habitat of the microorganisms, their most important beneficial functions, especially their fermentation activity in dairy products. Above all I was interested in pros of *Lactobacillus acidophilus*.

I was motivated by general idea, which most people believe in, that microbes can only harm them, although they have greatly consequential meaning not only in our environment, but also in bodies of humans. The aim of my presentation is to inform the target group on this fact, particularly from scientific point of view. Literature and internet sources, as well as specific sources from university lectures, seminars and laboratory exercises helped me to assemble the very cardinal facts concerning microorganisms. In fact, I have a personal experience with consuming dairy products and I wonder whether the statements in shops and on TV commercials are true or not. My aim was to make a presentation which can be delivered to miscellaneous audience, therefore started with general facts and continued with the particular use of microbes.

Microorganisms are bacteria, archaea, fungi, algae, viruses and protists. We can not see microbes, but we usually feel their effect associated with an illness. However, it is not always true. Microorganisms are essential to our very existence. They are ubiquitous, found in common environments and their diversity is enormous. In natural environments microbes have very specific jobs. When the plants and animals die, the nutrients remain in the carcass. The nutrients that are trapped in detritus must be released in order for life to continue. It is microbial population of environment that is responsible for this nutrient recycling. There are normally 10 times more microbial cells on/in a human body than human cells. The good bacteria that live on and in us protect us from bad invaders as well as our digestion has also evolved to use bacteria for assistance. Moreover, microbes are responsible for getting rid the waste generated by industry and households. They also purify waste water after primary mechanical treatment and aeration. Microbes are builders, making products such as vitamin c. Approximately 70% of antibiotics currently in use are the product of *microbial fermentation*. On the other hand, the dispensing of antibiotics in a medical facility inevitably leads to waste. There are some negatives of microbes in terms of production, household products, sprayed on crops and animal production. The main target is to focus on microbes – especially bacteria – that have been used for centuries to provide us with food. For instance yogurt and sour cream are produced by bacterial fermentation of *lactose*, the sugar of milk. Milk is extremely

perishable and many means have been developed to preserve. The earliest one which have been used for many thousands of years is fermentation. Milk can be fermented by inoculating fresh milk with the appropriate bacteria and keeping it at a temperature which favors bacterial growth. As the bacteria grow, they convert lactose to lactic acid – it is the sour taste of milk. Fermentation is a mean by which cells growing anaerobically can still generate a little ATP. It is biochemically defined as the catabolism of glucose (or other sugars) in which the terminal acceptor is an organic molecule (carbon containing).

Numerous strains of bacteria are capable of converting lactose to lactic acid. We will look at several fermented milk products (yogurt, buttermilk, sourcream) to study their morphology and staining characteristics. *Lactobacillus acidophilus* is one of several bacteria in the genus *Lactobacillus*. The bacterium thrives in more acidic environments than most related microbes (pH = 4-5 or lower) and grows best at 45 degrees celsius. *Lactobacillus acidophilus* occurs naturally in the human and animal gastrointestinal tract, mouth and vagina. It is homofermentative microbe and it ferments lactose to lactic acid. Certain related species – heterofermentative – also produce ethanol, carbon dioxide or acetic acid this way. Some strains of *Lactobacillus acidophilus* may be considered a probiotic or *friendly bacteria*, found in dairy products. With consumption of these products with added friendly microbes we can improve our health and simply feel better. In my point of view, it is essential to gain knowledge in the field of own well-being and proper functions of organs influenced by our diet.

In conclusion I would like to emphasize that *L. acidophilus* is often sold in health stores in pill or powder form as a nutritional supplement. Research on the nutritional benefits of taking *L. acidophilus* supplements is inconsistent and inconclusive. Most such claims boil down to a link between *L. acidophilus* and a possible decrease in the incidence of certain diseases, including yeast infections, gastrointestinal disorders, and a weakened immune system. Most researchers agree further study is needed before substantiating many of these claims.

Key words: microorganisms, microbial fermentation, lactose, *Lactobacillus acidophilus*, friendly bacteria

References:

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4. Biology.ed.ac.uk.
<http://www.biology.ed.ac.uk/research/groups/jdeacon/microbes/>
5. Wikipedia.org.
http://en.wikipedia.org/wiki/Lactobacillus_acidophilus

FACULTY OF NATURAL SCIENCES
UNIVERSITY OF SS CYRIL AND METHODIUS IN TRNAVA

Title of Project: **The Importance of Glucose for Human Body**

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Study programme: Chemistry

Abstract

My project consists of five basic parts: characteristic, structure, production, function and insufficiency of glucose. In the first part I deal with basic facilities of glucose. In the second part I describe structure of glucose, two forms in which glucose can be found. In the third part I speak about production of glucose, importance of natural production and about its commercial production. The fourth part contains basic information concerning the influence of glucose on human body. And finally the last part informs on insufficiency of glucose and expression and therapy of this disease.

I decided for this topic because of its topicality in recent days. On television, on radio and in our lives we can meet problems concerning this issue. I designed my presentation upon recent information found in the internet and in books that deal with this topic. I also was inspired by information from the University lectures and seminars.

Many people suffer from insufficiency of glucose which causes heavy affection called Diabetes mellitus - abnormally high *blood sugar*. I would like to explain the important function of glucose. It is interesting, that bad enter of glucose into the cell causes that tissues can die and because of this fact, legs of many people are amputated.. Everybody who has these diseases have to take insulin. It tells about the importance of the glucose for our body.

It is one of the main products of *photosynthesis* and starts *cellular respiration* in both *prokaryotes* and *eucaryotes* and is a main energy source in human cells, too. Glucose is used in *aerobic* or *anaerobic respiration* is substrate for *Citric acid cycle* (TCAC), it is *oxidized* to CO_2 and *water* and by this source of CO_2 for plants. Glucose is the result of the breakdown of *glycogen*, a process known as *glycogenolysis*. Our body proves to synthesize glucose in the *liver* and *kidneys* from non-carbohydrate intermediates, such as *pyruvate* and *glycerol*, by a process known as *gluconeogenesis*.

Glucose is only a molecule in our body but it is a very important molecule which deserves our attention.

Key words: energy source, human cells, *cellular respiration*, Diabetes mellitus, insufficiency of glucose,

References:

Kolektív: Lekárska biochémia I Bratislava: Univerzita Komenského, 2006.242 s. ISBN 80-223-1091-3

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<http://www.medicinenet.com/glucose/article.htm>

FACULTY OF NATURAL SCIENCES
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Title of Project: **Affiliate Marketing**

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Study program: Informatics

Abstract

In this presentation I will show you how affiliate marketing works and how to use it on the Internet. The reason why I want to explain how the affiliate marketing works is very simple. You can make money from that.

Affiliate marketing consists of two different parts. The first one is called merchant and the second is affiliate. Basically, the merchant is an owner of an affiliate program that provides the affiliate marketing system. For you as an owner of a website it is possible to be a part of affiliate marketing system. You can simply add yourself into the system and refer the products and services to your customers. When the customer on your website wants to buy the products or services, then the he or she is redirected into the merchant site, where they buy what they want. On the other site the merchant pays a commission to the affiliate. This is a very simple model of affiliate marketing.

Affiliate marketing also consists of three main models. The first is Pay-Per-Lead, the second Pay-Per-Click and the last Pay-Per-Sale. The PPS model seems to be the best and I hope, that each of you exactly knows why.

Why you should start your own affiliate program. At first it is an easy cost-effective solution. It also generates better search engine rankings, free website traffic and finally, you earn a commission.

My next question is: How you can build your own affiliate business? You can find the answer on the conference (SVK, 13.5.2008, room S.3.5)

Key words: Affiliate, merchant, commission

References:

1. http://www.qualityunit.com/postaffiliatepro/?a_aid=babafcd7&a_bid=308c500e
2. <http://www.affiliatemanager.net/what-is-affiliate-marketing.shtml>
3. <http://www.affiliatemarketing.co.uk/>

STUDENT RESEARCH CONFERENCE, ENGLISH LANGUAGE, 13 MAY 2008

**FACULTY OF NATURAL SCIENCES
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Title of Project: **A New Camera Concept**

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Study programme: Informatics

Abstract

This project brings the view of the latest knowledge about camera technology. It offers a deeper look at a new camera concept called C3, the newest technology developed by JAI Corp.

The project presents a description of the present camera system that was shown for the first time in the VISION 07 Exhibition in Stuttgart, Germany. The three models of JAI cameras are introduced with an explanation of many possibilities of use and innovative design and progressive features. This project also includes a functional usage of the cameras in different applications and the most important parameters.

In the first section, a detailed description of the JAI cameras and their first presentation in Germany is included, manifesting their top quality and advantages for both common users and demanding users. The second section covers the three models of the camera, particularly, the Basic one, the Compact one and the Advanced one. It also includes the displays of camera equipment for each model. The third section explains how to use the camera and informs about various possibilities of application of this concept. The most important parameters concerning the range, resolution, and frame rates are included as well.

We did a research on different user forums, whether the users tried this technology or they would like to try it. This project also includes the results of our research.

Key words: camera, concept, basic, compact, advanced

References:

1. Firstsight Vision Ltd.
2. http://www.applegate.co.uk/news/new1/13660.htm?clickedfrom=COMPNEWS_81731

FACULTY OF NATURAL SCIENCES
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Title of Project: **The Web Browsers**

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Study programme: Informatics

Abstract

The aim of this project is to examine new web browsers and inform about their features and ways of use. The reason for choosing this topic was that many people know and use only one web browser. The authors want to show that there are a lot of kinds of web browsers such as Opera, Mozilla Firefox, Netscape, or Safari.

In the first part, a diagram is displayed showing the percentage of web browser usage, each web browser being presented in a detailed description. Each description contains the facts concerning history, percentage of usage, functions, and parameters. The second part includes the information about a cold start, a warm start, rendering CSS (Cascading Style Sheets), and the speed of scripts.

Cold start

This is the time it takes to do a cold load. We log out, then in, and then, once all background processes have completed, we run the browser as the first program. We use default settings for the browser, without preloading or quick-launch tools, unless the browser installs itself in this way, as with Internet Explorer on Windows.

Warm start

After completing a cold start, we close the browser, then measure the time of how long it takes to start again. We restart it again another two times, and take an average.

Rendering CSS

To test the CSS rendering speed, we use a CSS benchmark test devised by nontroppo profile. The test measures the time it takes the browser to render a page consisting of almost 2500 positioned DIVs (division tags). The page is stored locally, loaded once to pre-load it, then reloaded 3 times, and the average time taken for those three renderings. The page is the first page loaded after starting the browser (after logging out and in). All browsers took significantly longer during the initial load, which is why we discount this initial load, as it does not reflect the reality of normal rendering.

Script speed

To test scripting speed, we use the fantastic benchmarking tool at 24fun.com. This is intended for testing multiple browsers on one computer to see how well they perform compared with each other. Small variations in hardware or software can cause big differences in results so it is important that all tests are done on the same computer. After logging out and logging in, we load a browser, clear its cache, enable popups (a test requirement) for the site, and then run the tests. With most browsers we test twice and take an average but it is not recommended to do that with iCab, because it is a slow browser.

Key words: history of web browsers, speed of scripts, rendering CSS, cold start, warm start

References:

1. <http://en.wikipedia.org/wiki/Opera> (Web browser)
2. <http://en.wikipedia.org/wiki/Firefox>
3. <http://en.wikipedia.org/wiki/Mozilla>
4. http://en.wikipedia.org/wiki/Internet_explorer

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Title of Project: **PC in Future**

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Study programme: Informatics

Abstract

This project is concerned with computers in future. It contains three sections. There is a description of statements of computer experts. The main part of the work is devoted to computers in 2020, how a new computer looks like, how it works and what parameters it has. There is a detailed description of how a new computer transfers and recovers data. The last chapter is a conclusion where the author informs about the reasons why a PC is the thing of the past.

It is very interesting that experts did not expect such fast evolution of computers as it is now. Thomas Watson who was an IBM chairman in 1943 told that the world market was maybe for five computers. Ken Olsen, who is a founder of the Digital Equipment Corp., told that there was no reason why anyone would want a computer in their home. A very famous and important man Bill Gates told in 1981 that 640 k ought to be enough for anybody.

The main section covers a demonstration of what computers might look like in the year 2020. A computer of the future is a pen, called the Pen PC. It has a rechargeable lithium battery and contains tubular holographic storage device which is capable of storing terabytes of data. It is far exceeding the capacity of today's hard disc. The Pen PC has a docking stand which holds the Pen PC in place. This new discovery uses lasers and infrared technology and nay projects a screen on the wall. It also projects a full-size keyboard onto any flat surface. As someone types on the laser projection, it analyzes what is being typed by the coordinates of that location. The virtual keyboard can be customized to any size. The Pen PC has E-fingerprinting which allows to activate the PEN PC. If the owner loses it, no one else can access the data. Backups of all data can be stored on a watch fitted with a holographic storage unit. Wireless Bluetooth technology transfers the data from the pen PC to the watch.

In conclusion, we can say that in 2020 physical keyboards and monitors will be a thing of the past. The Pen PC will be the ultimate in a truly portable computer. It is amazing that a virtual keyboard is already in the market for certain cell phones and PDAs.

Key words: data, pen PC, laser

References:

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2. www.theregister.co.uk
3. www.urbanlegends.about.com

STUDENT RESEARCH CONFERENCE, ENGLISH LANGUAGE, 13 MAY 2008

**FACULTY OF NATURAL SCIENCES
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Title of Project: **Securing Your Laptop**

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Study programme: Informatics

Abstract

Everybody who uses a laptop faces the risk that it can be stolen. The aim of this project is to inform about the ways of protecting the laptop from theft and possibilities of getting it back if it is stolen.

There are a few ways of how you can feel safer, but I will focus on the four most popular. The most easy way is to purchase a physical lock, then you can lock your computer, for example to the table.

If you want to feel even safer, you can try attaching a notebook alarm to your laptop. It works like an alarm in the car – sounds if the notebook is moved or if someone puts a wrong pin into your device.

If you did not protect your notebook well and it was stolen, or if you forgot it somewhere, recovery tag is a good way of how to get it back. Still, there are some honest people, and vendors of recovery tags report very good recovery rates.

Locking and encrypting your hard drive is a solution especially for those who have confidential business data or personal information in their laptop.

Laptop security is an ongoing process. The need for regular information on laptop security is vital. The more informed you are on laptop security, the less vulnerable is your laptop to theft or damage.

Key words: laptop, security, lock

References:

1. Christopher Okoh:
<http://www.governmentsecurity.org/articles2/secureyourlaptop.php>
2. Michelle Johnston Sollicito:
<http://www.informit.com/articles/article.aspx?p=174137>
3. Becky Waring and Robert Strohmeyer, PC World:
<http://www.pcworld.com>

STUDENT RESEARCH CONFERENCE, ENGLISH LANGUAGE, 13 MAY 2008

**FACULTY OF NATURAL SCIENCES
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Title of Project: **Water-Cooling of Computres**

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Abstract

The aim of a project was to build a water-cooling system of a computer and to prove its advantages against other types of computer cooling systems.

In the introduction, the author of the project gives an explanation to the question, why should water cooling be better than air cooling. In the next part, each part of the water-cooling system is described one by one in detail.

The project contains a simplified and very concrete animation showing the principle of how the water-cooling system works.

After reading the article, any amateur should be able to build his own water-cooling system of a computer.

In addition to the instructions given, there are included comparisons of different cooling types which the author achieved by testing during the last months, working on different processors with different frequencies. In these comparisons, there can be seen remarkable changes in the temperatures of the processors when cooled by water and by air. The processors used are the latest central processing units (CPUs) made by the two world's biggest CPU-manufacturers and running on different frequencies. It is very clearly seen that the water-cooling has overrun the air-cooling with a huge difference.

It is recommendable to notice the design of the water-cooling system. Here the author shows that water-cooling is very customizable and, to demonstrate this, he includes a picture of his own water-cooling system where everything glows under the UV lamp, even the water.

In a conclusion, the author summarises the benefits of the computer water-cooling system including its price, and gives advice on where the system can be bought.

Key words: water block, water pump, reservoir, radiator, tubing

References:

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STUDENT RESEARCH CONFERENCE, ENGLISH LANGUAGE, 13 MAY 2008

**FACULTY OF NATURAL SCIENCES
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Title of Project: **Personal Digital Assistant Applications**

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Study program: Informatics

Abstract

In recent years, there have appeared a lot of electronic devices which combine different functions in one piece. It depends upon a customer how he or she is able to make use of the knowledge of the IT technology. One of the most practical devices serving for multiple uses is a Personal Digital Assistant (PDA), which is becoming to be used by more and more people.

This work is aimed to describe the device and explain basic features of this new technology. The most part is devoted to different applications and advantages of this apparatus. The history of creation and its further development is included as well.

PDA is very practical, because it is a hand-held device combining the features of a computer, telephone, fax, Internet, and GPS (Global Positioning System). Typical functions of the apparatus are those of a cellular phone, Web browser, personal organizer, camera, and road navigator. It is pen-based, using a stylus and touch-screen for input, with handwriting recognition features. PDAs in a keyboard version are available too. Some types of PDAs react to voice input. For their user-friendly design and high technical parameters and multifunctional applications, PDAs are utilised by companies and individual users. The drivers appreciate the possibilities of GPS navigation in road traffic which make their driving safer.

One of the first companies to produce PDAs was Apple Computer which introduced Newton MessagePad in 1993. Today, many other manufacturers offer this kind of product, enhancing its quality and improving prize. The series of Palm Pilots from Palm, Inc. belong to the most popular. PDAs are also called palmtops, hand-held computers and pocket computers.

Key words: Personal Digital Assistant, Global Positioning System, mobile phone

References:

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2. www.mio.com
3. [http:// www.blackberry.com](http://www.blackberry.com)
4. www.webopedia.com/TERM/P/PDA.html

STUDENT RESEARCH CONFERENCE, ENGLISH LANGUAGE, 13 MAY 2008

**FACULTY OF NATURAL SCIENCES
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Title of Project: **High-Definition Disc Technology**

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Study programme: Informatics

Abstract

A team of Blu-ray think that Blu-ray is the name of a next-generation optical disc format. The author's main idea is to inform about this new technology.

We know that Blu-ray is an optical disc which uses blue-violet laser technology to enable consumers to record high-definition TV broadcasting.

Blu-ray is characterized by very high storage capacities and high-speed data transfer rates.

Just as DVD meant a five to ten time increase in storage capacity compared to CD, Blu-ray Disc will increase DVD capacity by five to ten times. This is due, among other reasons, to the usage of a blue instead of a red laser and improved lens specifications, allowing for a much smaller focus laser beam which enables the recording of much smaller and higher density pits on the disc.

I mean Blu-ray Disc was a format designed to offer the best performance and features for a wide variety of applications. High Definition video distribution is one of the key features of Blu-ray Disc, but the format's versatile design and top-of-the-line specifications mean that it is suitable for a full range of other purposes as well.

The Blu-ray Disc format offers consumers the ability to record their High Definition television broadcasts in their original quality for the first time, preserving the pure picture and audio level as offered by the broadcaster.

Due to its enormous data capacity of 25 to 50 GB per (single-sided) disc, the Blu-ray Disc format can store High Definition video in the highest possible quality. Because of the huge capacity of the disc, there is no need to compromise on picture quality.

With the advent of the first HD camcorders, consumers can now for the first time record their own home movies in a quality level unlike any before.

In this work I want to confront these three media:

In its day, CD-R/RW meant a huge increase in storage capacity compared to traditional storage media with its 650 MB. Then DVD surpassed this amount by offering 4.7 to 8.5 GB of storage, an impressive 5-10 x increase. Now consumers demand an even bigger storage capacity.

The growing number of broadband connections allowing consumers to download vast amounts of data, as well as the ever increasing audio, video and photo capabilities of personal

computers have led to yet another level in data storage requirements. In addition, commercial storage requirements are growing exponentially due to the proliferation of e-mail and the migration to paperless processes. The Blu-ray Disc format again offers 5-10 x as much capacity as traditional DVD resulting in 25 to 50 GB of data to be stored on a single rewritable or recordable disc. As Blu-ray Disc uses the same form factor as CD and DVD, this allows for Blu-ray Disc drives that can still read and write to CD and DVD media as well.

From this comparison follows that future Blu-ray is the technology of future.

Blu-ray Disc has one disadvantage, which is its price.

I want to say that everybody of us can use BD. Blu-ray Discs will not be playable in current DVD players, however, existing DVD media is playable on Blu-ray Disc drives that have been specifically manufactured to have backwards compatibility with DVDs.

It appears that Blu-ray productions are making new and better world of technologies. Now it is just a dream, but in one year's time that can be a reality.

Key words: blue-violet laser, storage capacity, high-definition broadcasting, high-definition experience

References:

1. Official website for Blu-ray technology
2. www.blu-raydisc.com

STUDENT RESEARCH CONFERENCE, ENGLISH LANGUAGE, 13 MAY 2008

**FACULTY OF NATURAL SCIENCES
UNIVERSITY OF SS CYRIL AND METHODIUS IN TRNAVA**

Title of Project: **Computer File Systems**

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Study programme: Informatics

Abstract

Nowadays, computers work faster and faster and file databases are becoming larger and larger. There is a lot of documents, photos and important files that must be stored safely. It is not one man's job. There are two guards that are directly responsible for security of our files. The first one is a piece of hardware – hard drive. The second one is a software file system. On every hard drive, flash disk, CD/DVD disc, there must be some kind of file system (FS).

This work describes basic types of computer file systems like the disk FS, the network FS, and a special purpose FS. The knowledge of file systems advantages and disadvantages, modern features and “how the file system works” is interesting for every system administrator who needs to improve the performance of data servers or just safely and fast make the data backup.

At present, even a single (non-administrator) user may be influenced by computer file systems because modern computer systems are based on the traditional hierarchical file system model, but typically contain large numbers of files with complex interrelationships. This traditional model is not capable of meeting the needs of current PC users who need to be able to store and retrieve files based on flexible criteria. A metadata file system can associate an extensive and rich set of data with a file, thus enabling a more effective file organization and retrieval than the traditional file systems.

Keywords: file system, metadata, journaling, versioning

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STUDENT RESEARCH CONFERENCE, ENGLISH LANGUAGE, 13 MAY 2008

**FACULTY OF NATURAL SCIENCES
UNIVERSITY OF SS CYRIL AND METHODIUS IN TRNAVA**

Title of Project: **Formats of Optical Discs**

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Study programme: Informatics

Abstract

Ever since the invention of the phonograph in 1876, music has been a popular source of home entertainment. In recent years, the compact disc has become the playback medium of choice for recorded music.

A compact disc, or CD, is an optical storage medium with digital data recorded on it. The digital data can be in the form of audio, video, or computer information. When the CD is played, the information is read or detected by the laser.

The article contains descriptions of different kinds of Compact Discs. The author concentrates on a description of compact discs, in particular interactive compact discs, as well as rewritable and dual layer compact discs. There are given some main parameters of a compact disc as well. In the next part, the differences between CD and DVD are explained. The text also includes a manual on how we can write some data on the disc and which software it is recommendable to use.

The massive storage capabilities, accuracy of data, and relative immunity from wear and tear will continue to make compact discs a popular medium for music and video applications. The hottest new product stirring public interest is a Blue-ray Disc or BD, a multimedia system that allows users to interact with computers and television.

Key words: polycarbonate plastic, reflective foil, laquer, graphic

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STUDENT RESEARCH CONFERENCE, ENGLISH LANGUAGE, 13 MAY 2008

**FACULTY OF NATURAL SCIENCES
UNIVERSITY OF SS CYRIL AND METHODIUS IN TRNAVA**

Title of Project: **Blu-ray Disc: A New Storage Medium**

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Abstract

This project deals with a new type of a storage medium called a Blu-ray Disc (BD). In the introduction, the overall characteristics of this medium are given, as this new medium is quite unknown in the world. However, there are predictions that the Blu-ray discs will replace DVD's in the near future.

In the next part, the history of Blu-ray Disc is outlined including some strengths and weaknesses of this medium. Furthermore, there are given reasons why this new storage medium is better than the other storage media and which technologies are used to working with the new disc. In addition, the chemical and physical compositions are described.

The next part is devoted to the prognosis for the near future and what is the most probable picture of the future with storage media.

The logo of the Blu-ray Disc and logos of the most influential companies which use this new storage media are displayed together with a lot of other pictures to show the differences in quality between the Blu-ray Discs and DVD's.

Finally, the greatest opponent of the BD, the HD DVD is described, including some differences between these two opponents.

In a summary, the overall knowledge about the new storage media is summed up.

Key words: blu-ray, red-ray, high-definition disc, storage media

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STUDENT RESEARCH CONFERENCE, ENGLISH LANGUAGE, 13 MAY 2008

**FACULTY OF NATURAL SCIENCES
UNIVERSITY OF SS CYRIL AND METHODIUS IN TRNAVA**

Title of Project: **Computer Printers**

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Study programme: Informatics

Abstract

This project is focused on examining the development of computer printers. Attention is paid to different areas of this part of information technologies. The main aim of this project was to describe individual types of printers and to find out which type are the best for students of the University of SS Cyril and Methodius in Trnava.

The introduction is devoted to the history, invention and a discoverer of the first computer printer. The next part includes a survey of printing technologies. Here, some advantages and disadvantages of individual kinds of printers are explained. The working principle of printers is described in detail. In conclusion, there are given statistics including the percentage of the kinds of computer printers and companies which produce them. The author carried out a survey among a sample of students attending the Faculty of Natural Sciences at University of SS Cyril and Methodius in Trnava. This survey relates to the usage of types of computer printers. The result of this survey was finding out that the mass of the respondents use the monochrome laser printer. All the statistics are included in the oral presentation.

This work may be of interest for those people who do not distinguish between different kinds of printers and have not paid attention to these differences to this day.

Key words: computer printer, printing, statistics, survey

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