

Information Systems and Data Management

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Computer architecture

Hardware and software, bits, Bytes, KB, MB, GB, TB. Moore's law.

Processor, memory, hard disks, cards, input and output devices, data storage devices.

Operating systems, programs, data files, freeware, shareware, commercial and private programs, open source and proprietary software.

Computer networks

How to open tickets at UNIBZ.

Sharing resources, server and client. LAN, WAN and VPN, star architecture, net topology and peer-to-peer architecture, hubs, bits per second and bytes per second. Ethernet, fast Ethernet and Gigaethernet cables and wireless speed.

Gateway, firewall, web server, mail server. IP numbers, localhost, ports, Internet names, domain name server, typical internet suffixes.

Communication programs: Web browsers, Mail readers, POP3, SMTP, IMAP4, authentication and permissions for mail servers, Webmail, Posta Elettronica Certificata, VoIP and its costs, other communication programs.

Search engines: Crawler, Scoring system, keywords, AND/OR searches, using quotations, searching for images, next developments.

Internet connections: analogical dial-up PSTN, ISDN, broadband ADSL, upload and download speeds, congestion, Internet cable, GPRS, UMTS, wireless connection, digital divide, WiMax.

Technical requirements of Italian law 196/2003 on privacy.

Encryption, digital signature. Passwords: what are the risks, legal obligations, suggestions, token key.

Viruses: behavior, infection symptoms, user's responsible behaviors. Anti-viruses: how do they work checking the whole disk, checking suspect files, always running.

Email security: viruses, sender-subject-text falsification.

Spam: advertisement, letters' chains, frauds, phishing. Suggestions against Phishing. Antispam.

Navigation security: phishing, viruses. Suggestions: Microsoft update, data interception and secure connection https.

Backup: why doing backup, what to backup, where to copy the files, JBOD, RAID 0-1-5-10.

Windows

Windows XP, Windows Vista and its editions, Windows 7 and its editions.

Desktop appearance, printer settings, Start menu, Application bar, log off and shutdown.

Regional and language options: multilanguage installation, changing numbers and dates formats.

Windows File system: viewing files' extensions, files' tree structure, disks, disks at UNIBZ, directories, absolute addresses, files, links. File operations: run, open, open with, copy, move, rename, delete, link, compress files, compress with password.

File types and common extensions: programs, compressed, text files, documents (Word), documents (PDF), sheets (Excel), images, movies, audio, web pages.

File sharing: Multiple access problem, File permissions, Users and groups, Authorizations, Inheritance.

How to access UNIBZ network directories, how to empty network folder space.

Excel

Cells' references, columns, rows, name box, formula bar, autocalculate, sheets tab. Selection of non rectangular areas.

Multiple sheets: create, rename, color, move and copy, cell references across sheets.

Numbers' formats. Data types: values (general, number, currency, date, time, percentage), formulas, text. Cell format dialog box. Data entry and conversion: problems with dates and with percentages.

Autofill, autoincrement. Copy, paste, paste value only.

Importing tables from other programs: fixed fields, tab-delimited and character-delimited tables.

Excel formulas: mathematical operations, relative cell references, absolute cell reference, partial absolute cell reference, formula dragging. Functions and help on functions.

Mathematical functions: LOG, SQRT, EXP, LN, PI, ABS, ROUND, ROUNDDOWN, ROUNDUP, MAX, MIN, SUM, PRODUCT, conditional sum SUMIF.

Logical functions: IF, NOT, AND, OR.

Text functions: LEN, RIGHT, LEFT, CONCATENATE, REPT.

Date and time serial format and operations. Date functions: NOW, TODAY, DAY, WEEKDAY, MONTH, YEAR, DATE.

Net present value, internal rate of return, yearly net rate, yearly real global rate, loans with constant payments, loan with variable payments, redetermine the payment. Financial functions: XNPV, XIRR, PMT, IPMT, RATE, NPER.

Statistical functions: AVERAGE, STDEV, NORMDIST, NORMINV.

Goal seek. Circular references with iterative calculation.

Printing: preview, page setup, orientation and scaling, margins and centering, header and footer, printing area, rows and columns titles, gridlines, page order.

Document types: xlsx, xls, csv, txt, pdf. Producing and protecting PDF files.

Resizing columns: double click, autofit, dialog box, hiding and unhiding.

Conditional formatting.

Viewing: freeze panes, comments.

Charts: chart wizard, cell range selection, changing data range and custom series, automatic labels, chart formatting (titles, axes, gridlines, legend, data labels, data table), text boxes

Chart types: 1 data series (Histograms, Line and Area, Pie and Doughnut), Multiple data series (Stacked histogram, Stacked lines and stacked area), mathematical XY data series (Scatterplot).

Illustrations' shapes: rotating, resizing, yellow point, edit text.

Removing hyperlinks, sorting tables, filtering tables, sheet protection.

Pivot tables and Pivot charts.

Analysis ToolPak installation for Excel 2007. Statistics with Excel: descriptive statistics, building histograms of numerical variables.

Relational databases and Microsoft Access

Single-table databases: features of a database table, fields and records.

Multiple-table databases: information redundancy, space waste, relations, relational databases.

Relations: one-to-many, many-to-one, one-to-one, many-to-many, junction table, primary key and ID, referential integrity, foreign key, foreign key connected to two tables. Temporal versus static databases

What is Access, Access' competitors.

MyFarm database example, Northwind database example, database file locking and security, Northwind database overview.

Automatic data save by Access, undo, non automatic object save for Access, how to backup database.

Tables: datasheet view, design view, field types (text, memo, number, currency, date/time, yes/no, OLE object, index, hyperlink), field properties (size, format, decimal digits, required, allow zero length, validation rule, validation text), table validation rule, building Access tables, importing data from Excel files.

Relationships: relationships' diagram, create/modify/delete relations, enforcing referential integrity. Create relations using Lookup Wizard, create predetermined lists using Lookup Wizard and using values taken from another table.

Forms: what is a form, create using wizard, view/add/modify/delete records, subform, form locking.

Query: what is a select query, create using wizard, design view, no-show option, sorting, criteria, criteria in And and Or, adding tables, adding fields, creating virtual fields, Expression Builder (DATE, DATEDIFF, YEAR, LOG, ABS, SQR, EXP, INT, LIKE).

Summary query: group by option, count/sum/average/max/min options, using where option by for conditions.

Report: what is a report, create from tables or queries, create using wizard, grouping levels, sorting, export in RTF.

Database: how to create a database, paper diagram, tables, fields, relations, data, static versus temporal databases.