# Free University of Bolzano Bozen

# School of Economics and Management

# Computer Science and Information Processing exam

# prof. Paolo Coletti – 31 August 2009 – updated

## Rules

* + No communication with other people or among students is allowed. Phones and every other means of communication must be turned off. Opening any communication program on the computer is not allowed and is considered cheating.
  + You are responsible for the correct copy of your files.

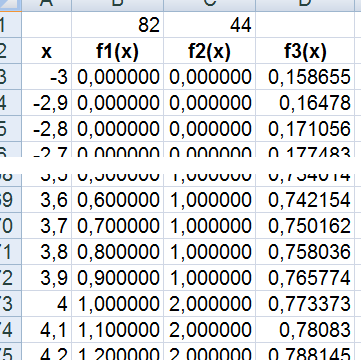
Enter Windows with your login. You have 40 minutes starting from now.

**Open Excel 2007 and make sure that Analysis Toolpak is installed**

## Exercise File handling

* Build directory **exam** on your desktop
* Go to \\ubz01fst\courses\**course\_coletti** and copy **test.zip** in **exam** directory;
* unzip test.zip’s content in **exam** directory;
* delete files test.docx and test.zip;
* build subdirectory **subexam**
* copy directory exam with all its content in \\ubz01fst\courses\exam\_coletti\YOURNAME;
* do the rest of the exam;
* at the end of the exam, copy all the other files you have produced, without any directory, into \\ubz01fst\courses\exam\_coletti\YOURNAME.

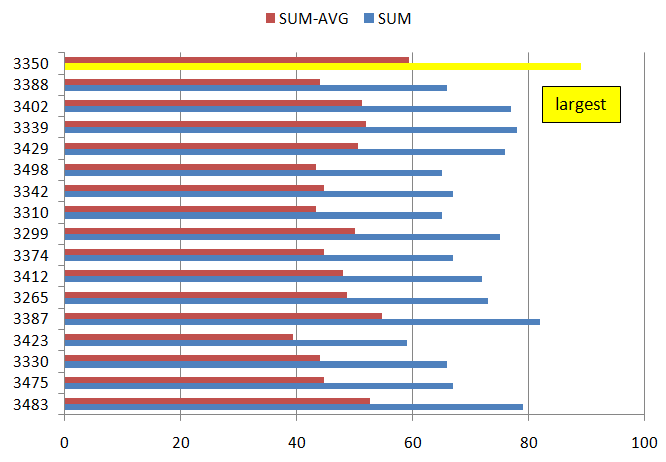
## Exercise Excel

Copy file \\ubz01fst\courses\exam\_coletti\YOURNAME\**lab.xlsx** to your Desktop and open it with Excel 2007

In sheet **Second**

* build in column A a sequence of static numbers from -3 to +7 with steps of 0.1;
* build values for function and for which is rounded up with no decimal digits;
* build values for function which is the area from to under the normal distribution with µ=1 and standard deviation=4;
* insert a new row 1 and in cell B1 calculate automatically the sum of column B values for which the corresponding column A value is positive;
* in cell C1 calculate automatically the sum of column C values considering only those values in column C which are larger than 3;
* in range E3:E103 put random numbers between 0 and 1;
* in a separate sheet build the histogram for these random numbers.

In sheet **First**

* hide columns C and D and apply automatic formatting to columns E, F and G to show red data bars instead of numbers;
* format column I with 3 decimal digits;
* using column A for labels and columns H and I for data build a bar plot like this one with appropriate axis labels, legend at the top and only the largest bar (person 3350) painted yellow;
* below the yellow bar put a text box with black borders and yellow background;
* in a separate sheet build descriptive statistics for IDs in column A.

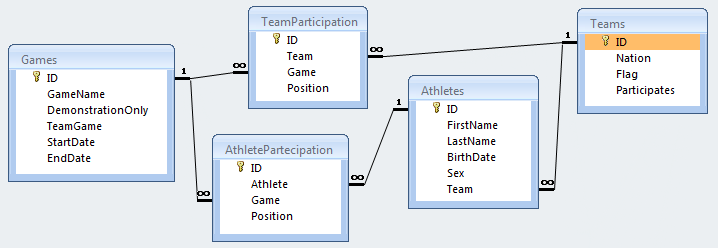
In a new sheet called **loan** with tab coloured red

* build a loan table for 100,000 € with constant yearly payments of 10,000 € at 1st January and a variable interest rate of 3% for the first three years and 5% for the remaining years;
* calculate the internal rate of return for the loan.

Return the Excel file **lab.xlsx**.

## Exercise Access

Open database **olympicgames.accdb** and



* build form **form1** to view games and the athletes which participate. Lock the form to avoid only athletes’ deletions and modifications;
* build query **query2** which asks for a date and displays, nation per nation, the number of athletes who are involved in games held on that date (use only games which involve athletes’ participation);
* build report **report3** which displays, team by team, sex by sex, the athletes.

Return file **olympicgames.accdb**.

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You have 40 minutes starting from now.

## Exercise Theoretical questions

For each sentence, check either the TRUE or the FALSE box.

## Microsoft Outlook is a TRUE FALSE client TRUE FALSE mailreader TRUE FALSE firewall

**Mozilla Firefox is**TRUE  FALSE  a webbrowser  
TRUE  FALSE  a mailreader  
TRUE  FALSE  a webserver  
TRUE  FALSE  a client  
TRUE  FALSE  a server  
  
**This file extension is commonly used for images:**

TRUE  FALSE  .zip

TRUE  FALSE  .gif

TRUE  FALSE  .jpeg

TRUE  FALSE  .htm

TRUE  FALSE  .jpg

TRUE  FALSE  .docx

**A fast Ethernet cable has a maximum transmission speed in Megabytes per second of about**

TRUE  FALSE  12.5 MB/s

TRUE  FALSE  25 MB/s  
TRUE  FALSE  100 MB/s

**~~DNS means~~**~~TRUE  FALSE  Domain Network System  
TRUE  FALSE  Domain Name Server/Service  
TRUE  FALSE  Data Network Server/Service~~

**A web server is a program**TRUE  FALSE  users use as a client to navigate the WWW, like Internet Explorer  
TRUE  FALSE  installed by system administrators to show webpages to users  
TRUE  FALSE  installed by system administrators to automatically send emails

**This is a very good password**TRUE  FALSE  sabine85  
TRUE  FALSE  bozenbolzano  
TRUE  FALSE  sDo3kpWu  
TRUE  FALSE  mycomputer  
TRUE  FALSE  abcdefg  
TRUE  FALSE  t%\_oIp2a

TRUE  FALSE  iron\_maiden

**Files strongly suggested to be included in a backup are:**TRUE  FALSE  your own Word documents  
TRUE  FALSE  the Microsoft Office program  
TRUE  FALSE  this course Powerpoint slides  
TRUE  FALSE  your email address book  
  
**If you have read, but not write/modify, permission on a file on your desktop, you may**TRUE  FALSE  look at the file name  
TRUE  FALSE  look at the file content  
TRUE  FALSE  modify the file content and save the file somewhere else  
TRUE  FALSE  modify the file content and save the file in the same place with a different name  
TRUE  FALSE  modify the file content and save the file replacing the original file  
TRUE  FALSE  copy the file somewhere else

**A virus may**TRUE  FALSE  replicate itself on your computer  
TRUE  FALSE  send itself to your contacts via email  
TRUE  FALSE  infect other files  
TRUE  FALSE  delete files on your plugged-in USB pen drive  
TRUE  FALSE  delete your whole hard disk  
TRUE  FALSE  delete your data on a non rewritable CD (inserted in the CD-writer)  
TRUE  FALSE  send your personal data to other people  
TRUE  FALSE  install itself in the memory  
TRUE  FALSE  use your PSTN modem to dial phone numbers

# Write your name here: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Your signature here: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Exercise Relational databases

Draw the architecture of this database, using at least (more if necessary): 3 tables, a junction table, 5 fields per table. Try to make the database as complete as possible, keeping it simple and not contorted. You must indicate very clearly field names, field types (numeric, text, memo, date, yes/no), primary keys, relations with their “1” and “many” sides and the fields involved in the relations, required fields. For all the fields whose name is not obvious, you must also include a small comment that lets everybody understand what the field should contain. You must also justify non standard choices.

Moreover, suggest a new query which involves at least two tables and suggest another new query which needs a summary query to be implemented.

**Students association**: this temporal database handles data on each member, its degree, the association’s roles and all the fee payments. Each member may have only one role but in time s/he may have had different roles, each member is enrolled or was enrolled to only one degree course. The yearly fee is the same for all students, but varies from year to year and we want to know exactly who has paid what and when. The database should be able to answer to the question “how many president we had enrolled to EM between 2004 and 2009?”.