

KHARKIV NATIONAL UNIVERSITY OF RADIO ELECTRONICS

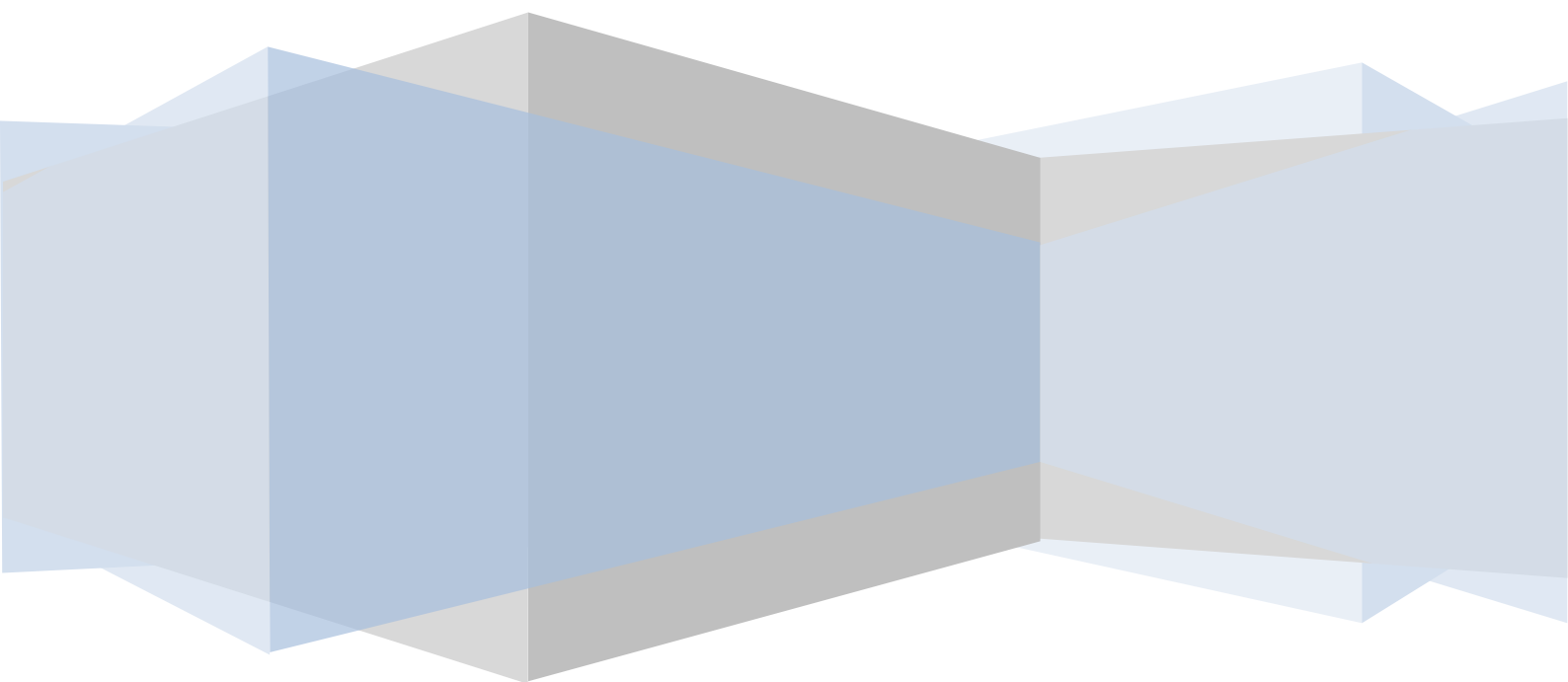
INFORMATICS

LABORATORY WORK #1

COMPUTER ARCHITECTURE

Associate Professor A.S. Eremenko,

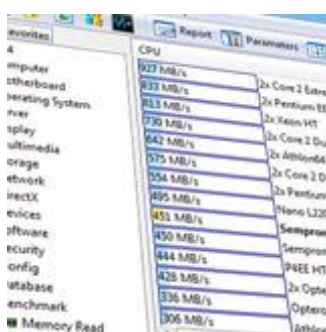
Associate Professor A.V. Persikov



AIDA64 Extreme Edition

AIDA64 Extreme Edition is a streamlined Windows diagnostic and benchmarking software for home users. AIDA64 Extreme Edition provides a wide range of features to assist in overclocking, hardware error diagnosis, stress testing, and sensor monitoring. It has unique capabilities to assess the performance of the processor, system memory, and disk drives. AIDA64 is compatible with all current 32-bit and 64-bit Microsoft Windows operating systems, including Windows 7 and Windows Server 2008 R2.

CPU, MEMORY AND DISK BENCHMARKS

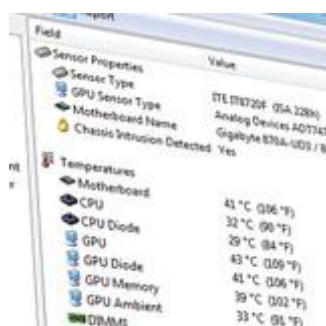


The screenshot shows the 'Report' window in AIDA64 with the 'CPU' and 'Memory' sections expanded. The CPU section lists various benchmarks like CPU FPU, CPU Memory, and CPU Cache, with values ranging from 927 MB/s to 306 MB/s. The Memory section lists Memory Read, Memory Write, and Memory Latency, with values ranging from 813 MB/s to 306 MB/s.

Item	Value
CPU FPU	927 MB/s
CPU Memory	813 MB/s
CPU Cache	730 MB/s
Memory Read	642 MB/s
Memory Write	575 MB/s
Memory Latency	554 MB/s
Cache Latency	490 MB/s
Cache Bandwidth	451 MB/s
Cache Latency	450 MB/s
Cache Bandwidth	444 MB/s
Cache Latency	428 MB/s
Cache Bandwidth	336 MB/s
Cache Latency	306 MB/s

AIDA64 implements a set of 64-bit benchmarks to measure how fast the computer performs various data processing tasks and mathematical calculations. Memory and cache benchmarks are available to analyze system RAM bandwidth and latency. Processor benchmarks utilize MMX, 3DNow!, SSE, XOP, FMA, and AVX instructions, and scale up to 32 processor cores. For legacy processors all benchmarks are available in 32-bit version as well. AIDA64 Disk Benchmark determines the data transfer speed of hard disk drives, solid-state drives, optical drives, and flash memory based devices.

TEMPERATURE, VOLTAGE AND COOLING FAN MONITORING



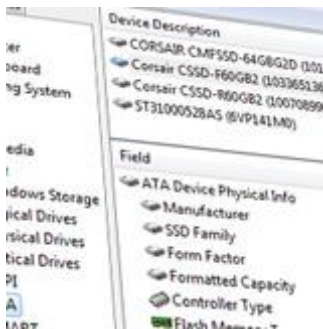
The screenshot shows the 'Sensor Properties' window in AIDA64. It lists various sensors including CPU, GPU, and motherboard temperatures, voltages, and fan speeds. The 'Temperatures' section is expanded, showing values for CPU, GPU, and motherboard temperatures in both Celsius and Fahrenheit.

Field	Value
Sensor Type	ITE IT8720H (ISA 2280)
GPU Sensor Type	Analog Devices AD7347
Motherboard Name	Gigabyte EP3A-UD5 / R8
Chassis Intrusion Detected	Yes
Temperatures	
Motherboard	41 °C (106 °F)
CPU	32 °C (90 °F)
CPU Diode	29 °C (84 °F)
GPU	43 °C (109 °F)
GPU Diode	41 °C (106 °F)
GPU Memory	39 °C (102 °F)
GPU Ambient	33 °C (91 °F)
GPU Memory	33 °C (91 °F)

AIDA64 supports over 150 various sensor devices to measure temperatures, voltages, fan speeds, and power draw. Measured values can be displayed on System Tray icons, OSD panel, Sidebar Gadget, and Logitech G15/G19 Gaming Keyboard LCD. The values can also be logged to file or exported to external applications such as RivaTuner or Samurai. AIDA64 can also alarm the user when it detects overheating, over-voltage, or cooling fan failure.

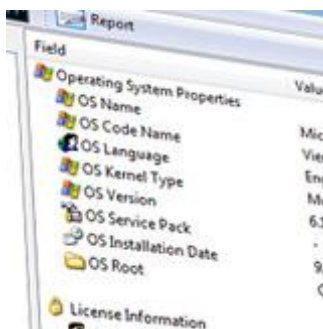
HARDWARE DIAGNOSTICS

AIDA64 has the most accurate hardware detection capabilities in its class, to provide detailed information on the computer internals without the need to open it



up. The hardware detection module is strengthened by an exhaustive hardware database holding over 120,000 entries. Additional modules are available to overview processor frequencies, check CRT and LCD display status, and stress the system to reveal potential hardware failures and thermal issues.

SOFTWARE AND OPERATING SYSTEM ANALYSIS



AIDA64 provides over 50 pages of information on installed programs, software licenses, security applications, and Windows settings. List of started processes, services, DLL files, startup programs, and visited web pages is also available.

AIDA64 Extreme Edition is designed to run on 32-bit and 64-bit Microsoft Windows operating systems. It can be run directly from an optical disc, but in such case any configuration changes made in the Preferences of the software will be lost.

SYSTEM REQUIREMENTS

- Operating system:
 - ✓ Windows 95/98/Me;
 - ✓ Windows NT4/2000;
 - ✓ Windows XP;
 - ✓ Windows PE;
 - ✓ Windows Server 2003;
 - ✓ Windows Vista;
 - ✓ Windows Server 2008;
 - ✓ Windows 7;
 - ✓ Windows Server 2008 R2;
 - ✓ Windows 8;
 - ✓ Windows Server 2012.
- Processor: Intel Pentium or later
- System memory: 32 MB or more. CPU, FPU and memory benchmarks require at least 128 MB system memory.
- Required disk space to install: 20 MB

INSTRUCTION

- "System Stability Test" button can be used to launch the AIDA64 System Stability Test

The right toolbar contains a button to launch the Report Wizard. It may also display other buttons that access page specific features, depending on the actual page viewed. For example, a Remove button appears when navigating to the Software / Auto Start and Software / Installed Programs pages.

3. Page menu

The page menu provides a general listing of all pages, such as hardware, software and DirectX information. The pages are grouped in the following categories:

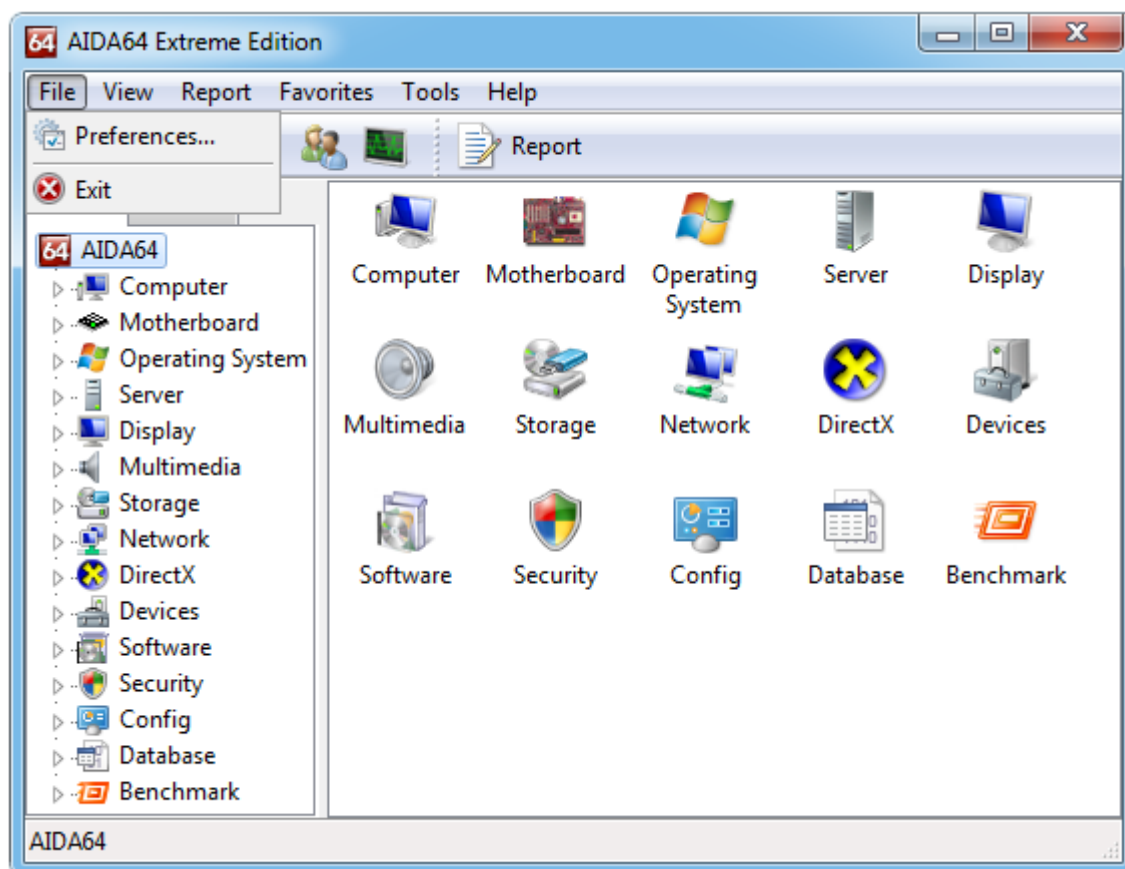
- Computer
- Motherboard
- Operating System
- Server
- Display
- Multimedia
- Storage
- Network
- DirectX
- Devices
- Software
- Security
- Config
- Database
- Benchmark

4. Information window

The information window displays specific information pertaining to each category from the page menu. The information window layout changes depending on the particular item being viewed; it can be a single list box (example: Computer / Summary page) or it can be divided horizontally into two list boxes (example: Storage / SMART page). A right-click on any single item will provide a command to copy the related information to the clipboard. Clicking on the column captions will sort the displayed information by alphabetic order.

File

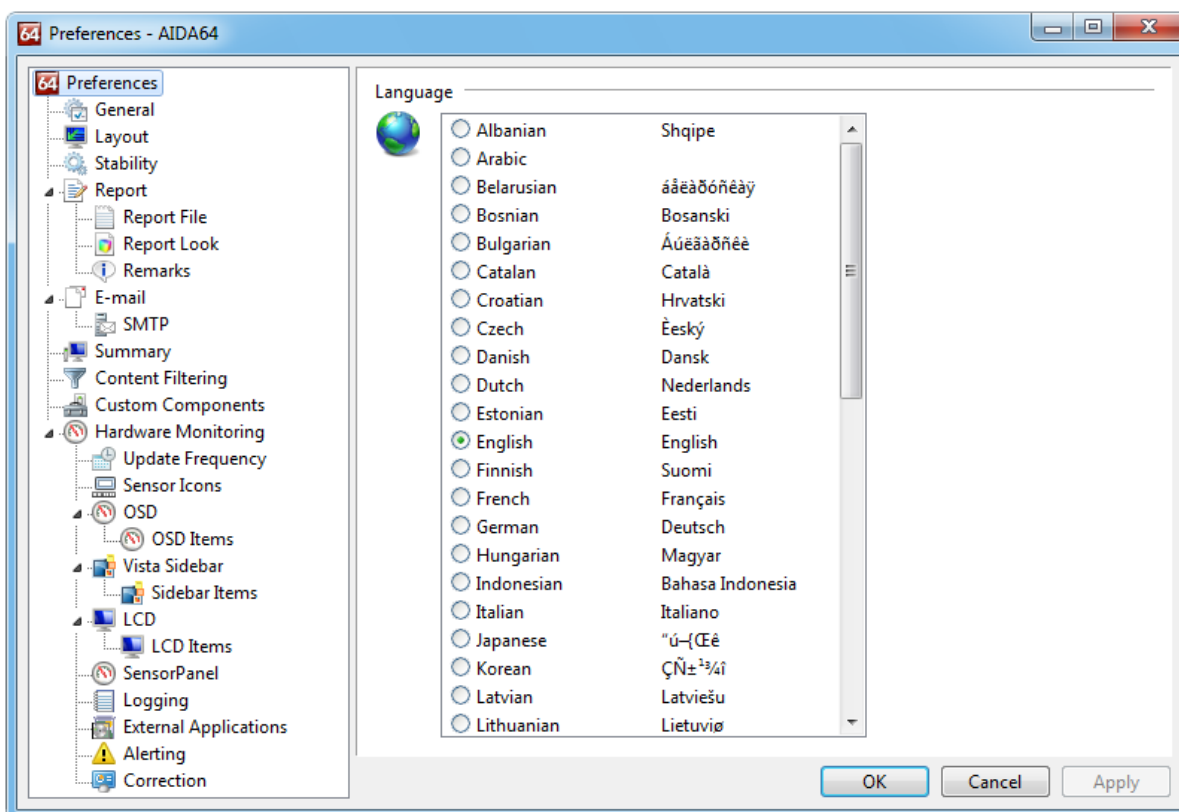
This menu covers **Preferences** and closing AIDA64.



Preferences

This menu item launches the **Preferences** module. **Preferences** can be used to customize features, behavior and layout of AIDA64. This module is accessed via main menu / File / Preferences.

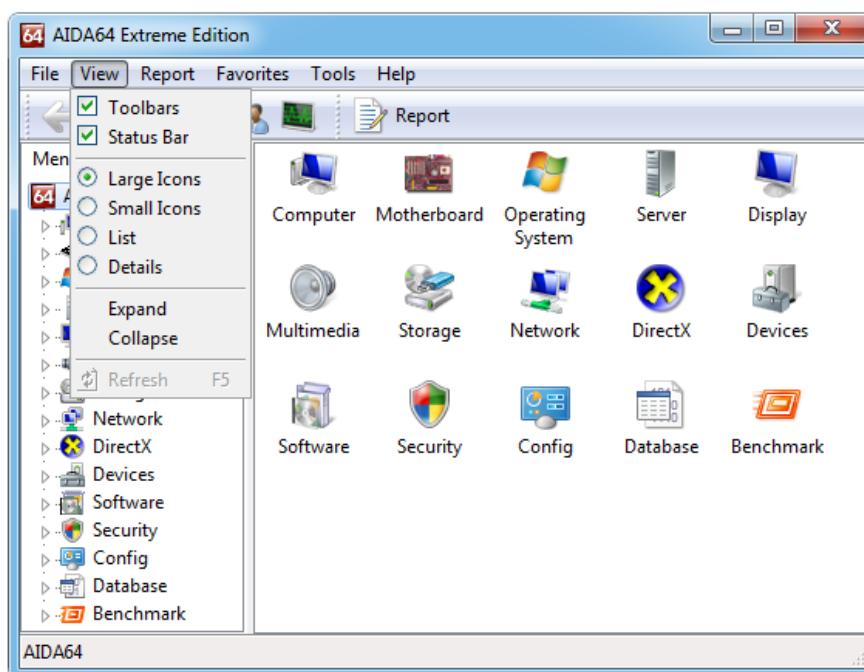
The first page of the **Preferences** module lists all possible user interface languages. The user interface language is changed by selecting the desired language from the list and pressing the "OK" button. Restarting AIDA64 is recommended after changing the user interface language, to assure that all user elements are updated and displayed correctly.



Exit: This menu item can be used to close AIDA64 and return to Windows.

View

This menu can be used to change the look of the page menu window.



Toolbars: This menu item displays or hides the toolbars.

Status Bar: This menu item displays or hides the status bar (on the bottom of the main window).

Large Icons: This menu item selects large icons view.

Small Icons: This menu item selects small icons view.

List: This menu item selects list view.

Details: This menu item selects details view.

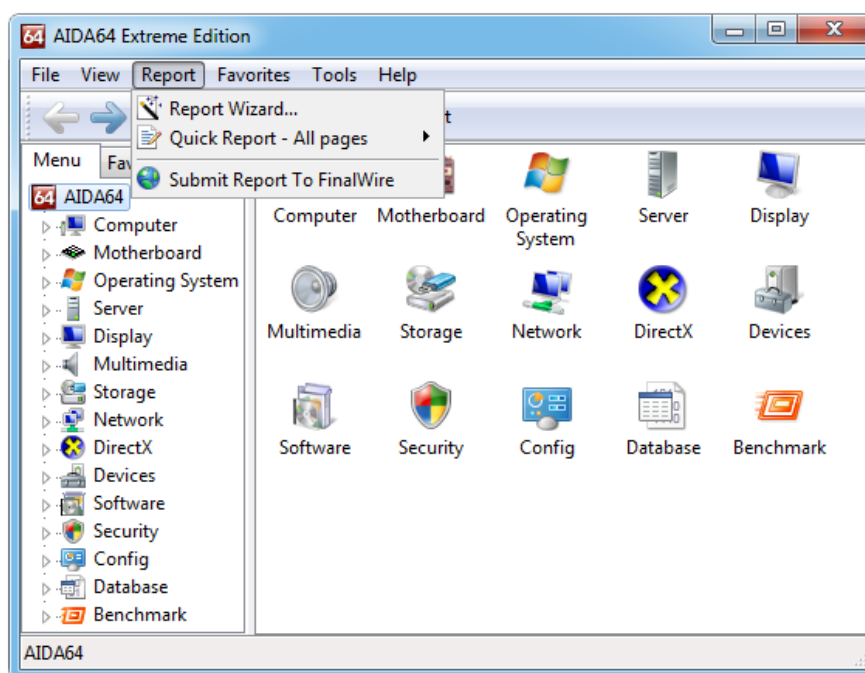
Expand: This menu item expands all submenus of the page menu.

Collapse: This menu item collapses all submenus of the page menu.

Refresh: This menu item refreshes the actual page.

Report

This menu covers the report creation features of AIDA64.



Report Wizard: This menu item launches the **Report Wizard**. **Report Wizard** can be used to create a report of the local computer interactively.

Quick Report: This menu item can be used to create an instant report of the local computer. The profile of the created quick report (i.e. the pages to be included in the report) is decided based on the highlighted category or page in the page menu.

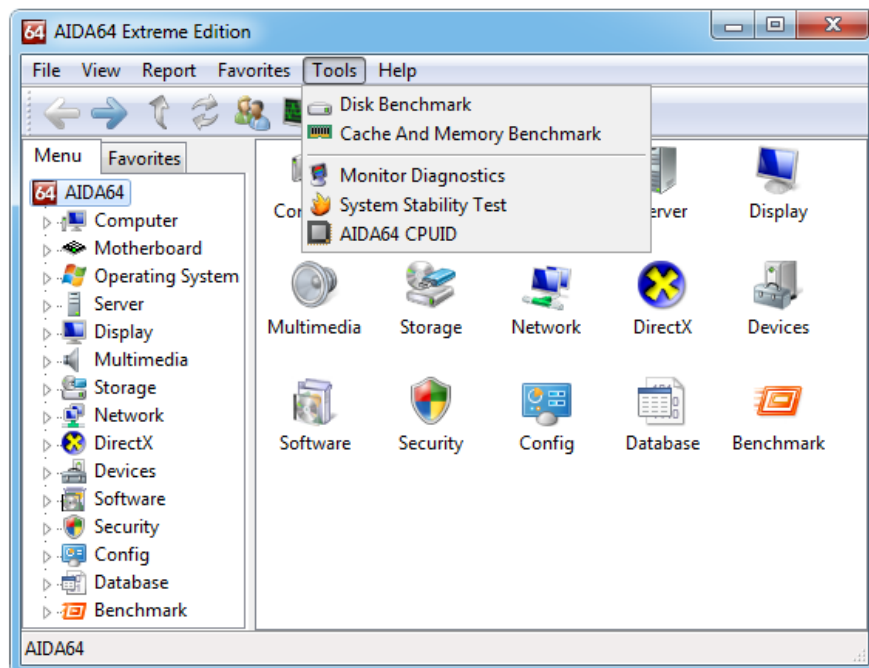
Examples:

- When the root of the page menu is highlighted, the quick report will include all pages.
- When Storage category is highlighted, the quick report will include all pages under Storage category.
- When Storage / ATA page is highlighted, the quick report will include only the Storage / ATA page.

Submit Report To FinalWire: This menu item can be used to submit a HTML report to the authors of AIDA64. Submitted reports only contain information about the computer hardware, and they could help investigating a software bug.

Tools

This menu covers the most frequently used modules of AIDA64.



Disk Benchmark: This menu item launches the Disk Benchmark. Disk Benchmark can be used to measure the performance of hard disk drives, optical drives, flash memory drives, memory cards and SSD drives.

Cache And Memory Benchmark: This menu item launches the Cache And Memory Benchmark. Cache And Memory Benchmark can be used to measure the bandwidth and latency of CPU caches and system memory.

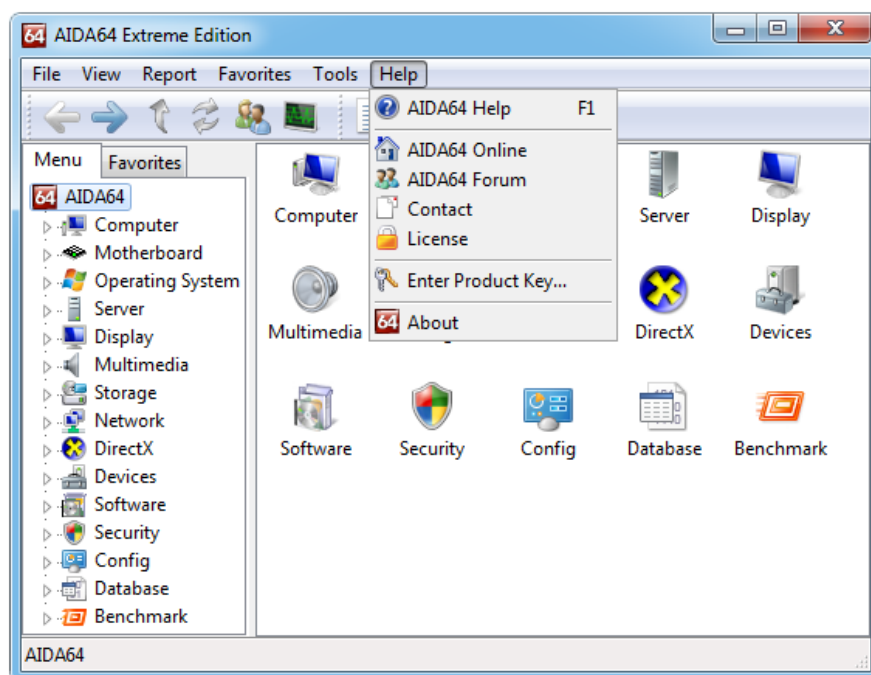
Monitor Diagnostics: This menu item launches the Monitor Diagnostics. Monitor Diagnostics can be used to check the capabilities and display performance of LCD and CRT displays.

System Stability Test: This menu item launches the System Stability Test. System Stability Test can be used to stress all major system components (CPU, caches, memory, hard disk drives) all at once, and find possible stability or cooling issues.

AIDA64 CPUID: This menu item launches the CPUID Panel. CPU Panel shows a one-page overview about the CPU.

Help

This menu covers the local and online help options for AIDA64.



AIDA64 Help: This menu item can be used to display the AIDA64 User's Manual.

AIDA64 Online: This menu item can be used to browse to AIDA64 web page.

AIDA64 Forum: This menu item can be used to browse to the AIDA64 Discussion Forum, where technical support and knowledge base is available for AIDA64 products.

Contact: This menu item can be used to post a feedback about AIDA64.

License: This menu item displays the AIDA64 End User License Agreement.

Enter Product Key: This menu item can be used to enter the product key received after acquiring an AIDA64 software license.

About: This menu item displays the About box of AIDA64. Version number and release date for the actual AIDA64 copy can be checked on this page.

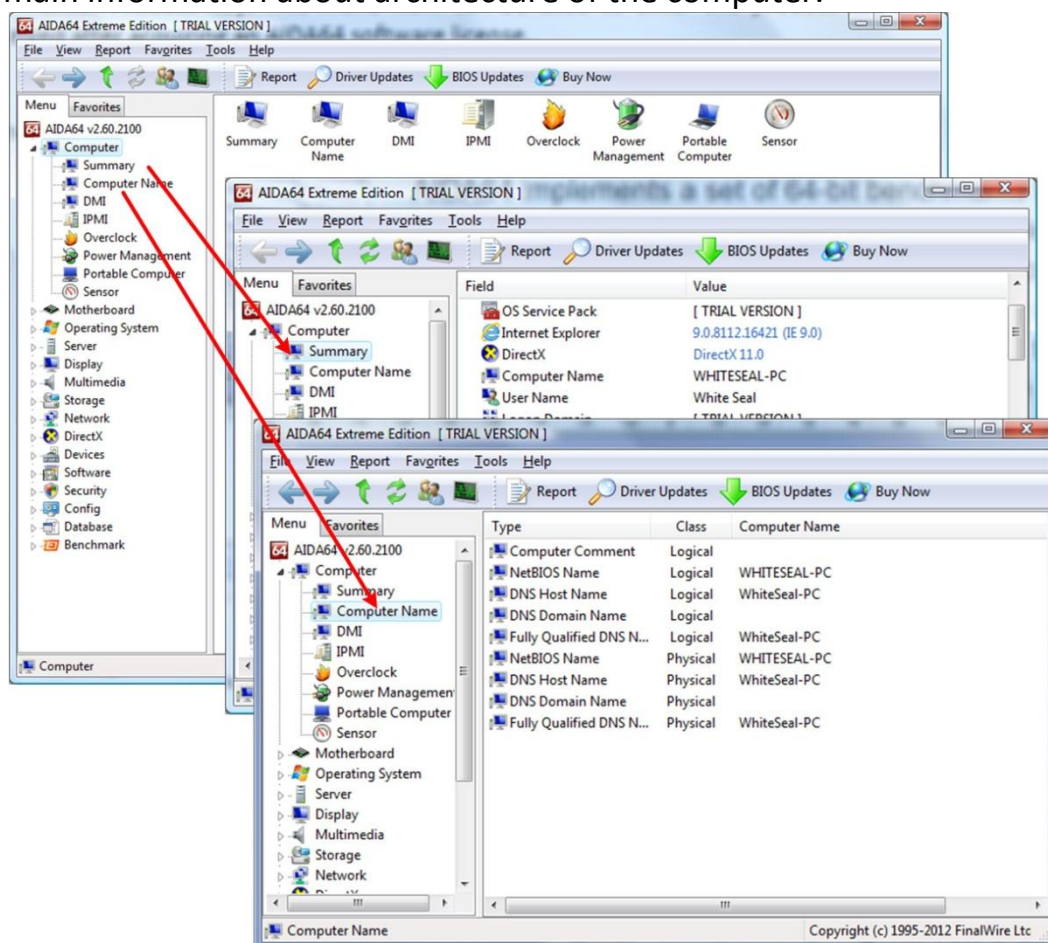
INSTRUCTION TO LABORATORY WORK

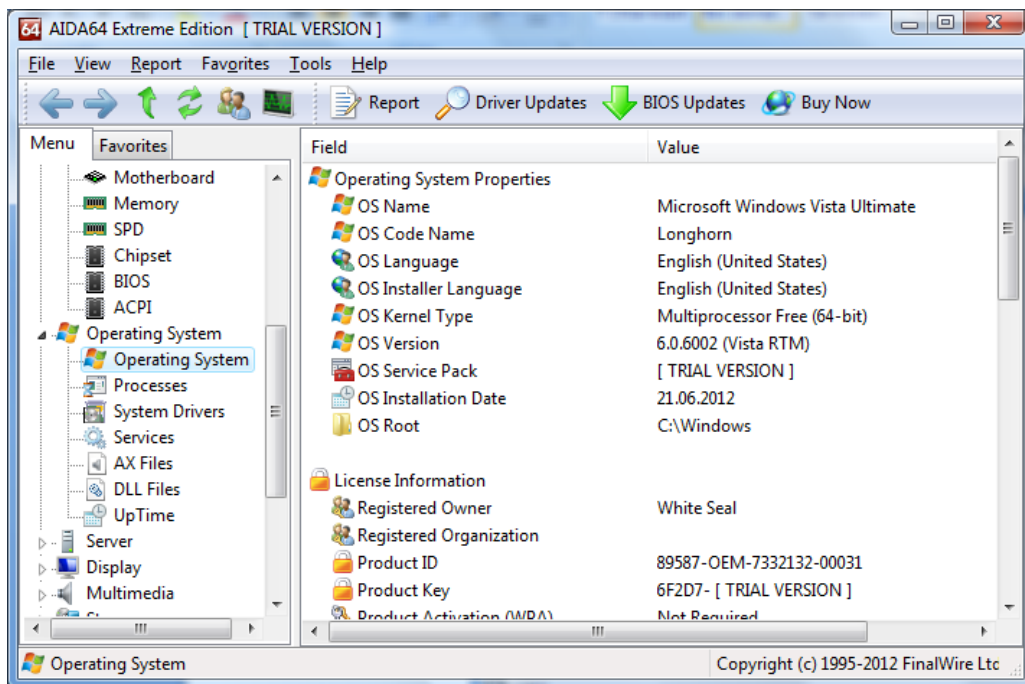
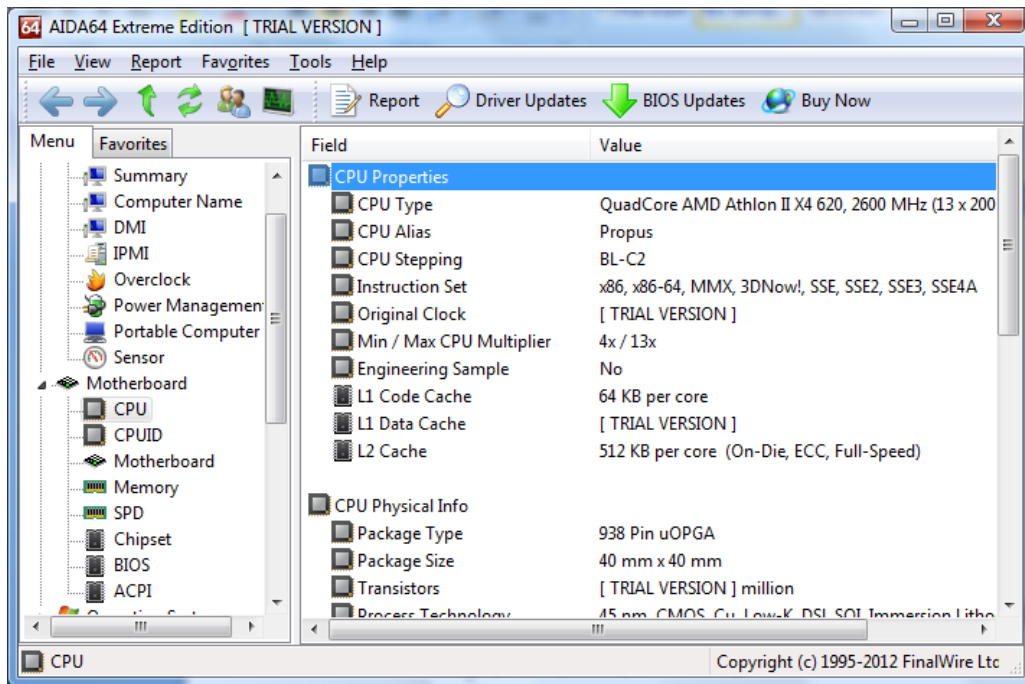
1) Run **AIDA64 Extreme Edition [TRIAL VERSION]** on your computer.

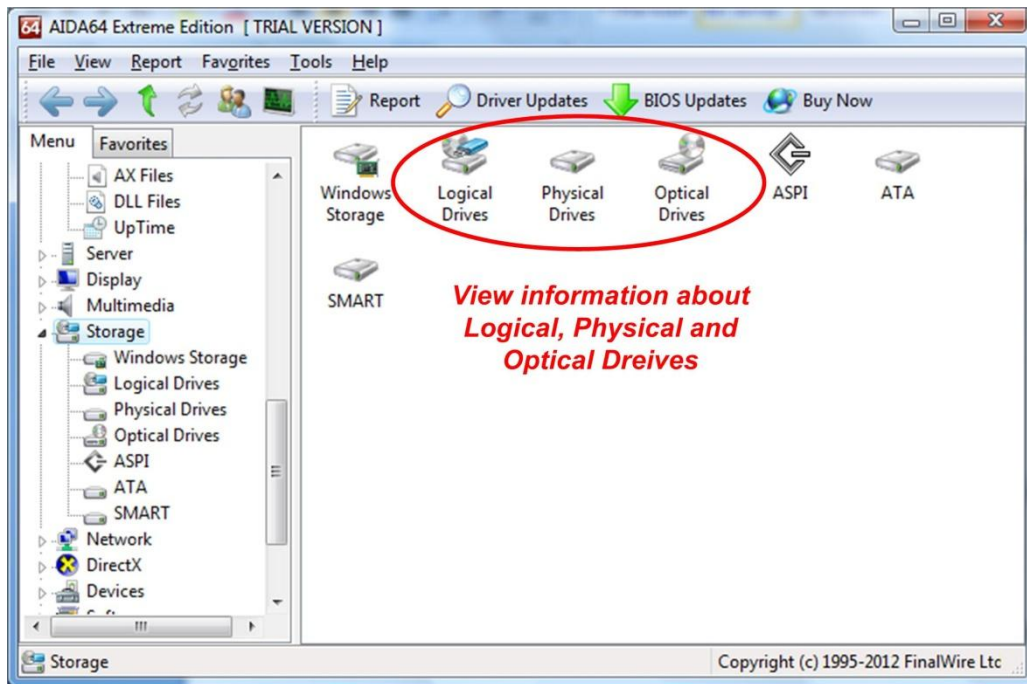
2) Click on the submenus:

- Summary;
- Computer Name;
- Motherboard;
- Operating System;
- Storage;

to view main information about architecture of the computer.



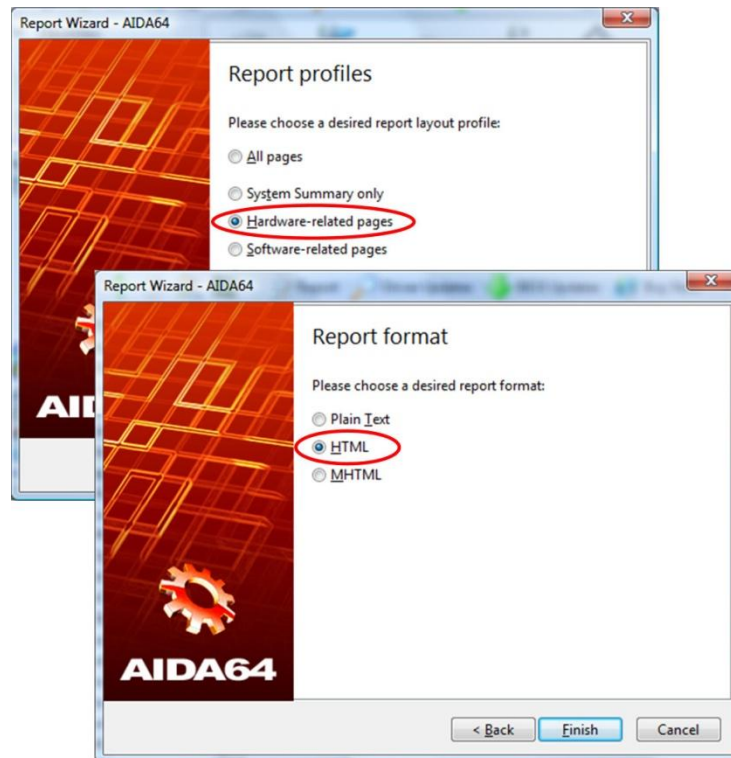




3) Open **Report Wizard**.



4) Choose in **Report** profiles **Hardware Related** pages and **Report** format **HTML**.



5) Analyze information and create a report (in **.doc(x)** format). Copy information from **Summary**:

- Computer;
- Motherboard;
- Storage;
- Partitions;
- Processors;
- CPU (main properties);
- Monitor;
- Physical Drives;
- Optical Drives.