LESSON PLAN
Electronics

Name of school	Grup Scolar Industrial "Iuliu Maniu", ARAD
Level	Advanced
Area	Electronics
Time	50 min per lesson
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LESSON 1

3

Tetraclone 586X/66

Access to text:

Read the title. Have you heard of Tetraclone 586X/66 before?
- If yes, what is it?
- If no, what do you think it is? (Answer without reading the text!)

Focus on content:

Now read the text:

The cut-throat competition between hardware firms that is now all the rage is exemplified in this new machine launched by Tetraclone, a Silicon Valley start-up owned by eccentric US millionaire Bill Hughes, who is afraid to be interviewed in case he gets "kidnapped" by ransom-thirsty crooks.

When I first set eyes on the machine to be reviewed, the first thing that struck me was the "Intel Inside" sticker boldly pasted next to the brand name. This, of course, is seen by the prospective buyer as a guarantee of quality and is a way of cutting costs for the computer manufacturer; Intel provides considerable financial marketing support for companies that agree to display the sticker.

The machine itself is sleek and uncumbersome for one that houses a 250Mb hard drive; its rounded shape is enhanced by the attractive design along the bottom right of the front panel. The unit has 3.5 and 5.25 inch floppies located just under the display screen and the power, hard disk and turbo lights and buttons all sit together on the top left of the panel. The rear of the machine boasts two serial ports, two parallel ports and a games port and while the machine itself is not exactly the most slimline around (it measures 402 mm x 375 mm x 95 mm), it is a worthy competitor in this price range.

The disappointment came when the lid was taken off the machine to reveal some poorly designed internal works. The motherboard sits at the bottom of the unit with a daughterboard slotting into one of the seven full-length slots on the motherboard. The graphics and the I/O controller boards are, however, plugged into the daughterboard, which has slots of its own, and consequently, if you want to get at the I/O card you have first of all to remove the power supply. Even though this is an uncomplicated 5-minute job, this is a detail that could have been avoided by some more careful forethought from Tetraclone's engineers. The greatest drawback of all, however, is the setup of the floppy disk drives. Instead of setting up the 3.5 inch drive as the 'A' drive, as is standard practice now, Tetraclone set it up as the 'B'. Our benchmarks, which work from a cold boot, unfortunately only work on 3.5 inch disks, so i had to get the help of our in-house technician to change the boot cable round.

The man-machine interface, I am pleased to say, has obviously received a great deal more attention from the designers. The machine comes with bundled software that not only helps a first-time user to find his way around the system in a flash, but also provides word processing, drawing, painting and virus protection utilities. The VGA graphics display of 256 colors at a resolution of 320 x 200 pixels is attractively flicker-free and about 45 minutes use of the machine resulted in no particular eye strain. The machine's price of £699 + VAT is particularly attractive when you consider the bundled software and a mouse thrown in for good measure. Though this is obviously not the machine for a laptop-lugging, high-flying executive, this is a sound entry level system that the owner can upgrade later if he feels his Tetraclone is running out of puff. And if you are interested, don't forget that you can get a 14-day money back guarantee.

Tetraclone 586X/66

Tetraclone 586X/66

1 Now answer the following questions:

1. Is Tetraclone an established firm? Justify your answer.
2. Name one way in which Tetraclone is trying to reduce the price of the machine.
3. For which companies does "Intel" provide financial support and why?
4. Does the reviewer like the design of the machine?
5. Where do you switch the machine on?
6. How many types of ports does this machine have, and how do you think they are used?
7. What criticism is made about the inside of the machine? Use your own words.
8. What is meant by the expression "the man-machine interface"?
9. Which are the unsatisfactory features of this machine, and how could they be improved?
10. Is the machine user-friendly? Why/ why not?

**2** Decide if the following statements are true or false:

- Bill Hughes is afraid to be interviewed because he can get "kidnapped" by ransom-thirsty crooks.
- Intel doesn't provide financial marketing support for companies that agree to display the "Intel Inside" sticker
- The machine measures 402 mm x 375 mm x 95 mm

Focus on language:

1 Match the following words to the appropriate definitions:

1. Hard Disk Drive	A.	A square piece of plastic on which information for a computer is stored
2. Floppy Disk	B.	Technical board where all the circuits of a computer are placed
3. Display Screen	C.	Instructions secretly put into a computer, that can destroy information
4. Motherboard	D.	A part that is fixed inside a computer and is used for storing information
5. Virus	E.	Part of a computer that looks like a television and shows information

2 Solve the following crossword puzzle. All words can be found in the text:
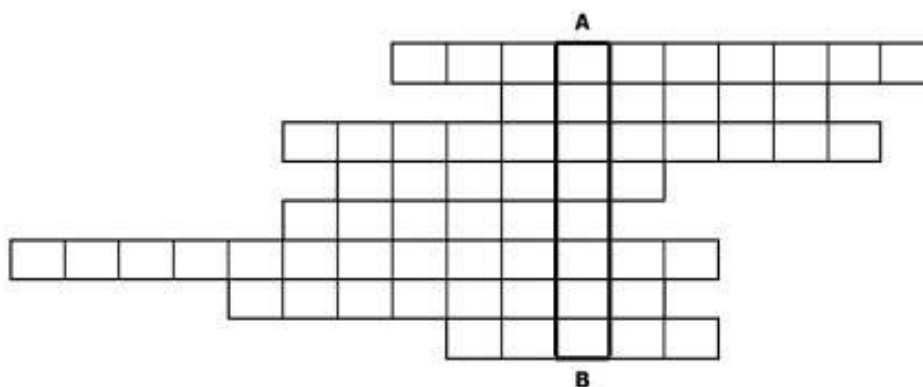
1. One whose occupation requires training in a specific technical process
2. Silicone ....
3. The main board of a computer
4. Intel ....
5. A writing or critical report
6. A printed circuit board that connects to the motherboard.
7. The programs that control the functioning of the hardware and direct its operation.
8. (in context) Good-looking

Tetraclone 586X/66

Interpretation:

- Rewrite - using your own words - the sentence beginning: "Though this is obviously not the machine..."
- What is the reviewer's conclusion about the computer?

Response:

- Use the following text as a starting point for an essay: "Many scientists remain doubtful that true AI (artificial intelligence) can never be developed. The operation of the human mind is still little understood, and computer design may remain essentially incapable of analogously duplicating those unknown, complex processes. Various routes are being used in the effort to reach the goal of true A.I.", what do you think about AI? Use between 200-250 words.

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LESSON 2

1 Darwin on a chip

Access to text:

The title of the text is "Darwin on a chip"
- What do you think is the connection between Darwin and chips?
- Predict what the text is about

Focus on content:

Now read the text:

Computer scientists love to plunder the biological world for new ideas. The fad of the 1980s was neural networks – webs of interconnected microprocessors modeled on the structure of neurons in the brain. The trend of the 1990s seems to be genetic algorithms. These involve letting many different solutions to a problem compete according to a computer version of the law of the jungle. Most researchers do this by writing software that mimics natural selection. But a group of Japanese engineers is now going one step further, and letting the electrical hardware of the computer evolve by itself.

Tetsuya Higuchi and his colleagues at the Electrotechnical Laboratory in Tsukuba are wiring together a group of chips that alter their own circuitry to adapt to their environment. In this electronic world, the equivalent of a chromosome is a sequence of ones and zeros known as a bit string. Each bit string defines the configuration of the electrical connections within a chip by holding some switches open and some closed, thus changing its architecture. The chips are tested to see how successfully they perform a certain task, such as moving a robot's arm. The "chromosomes" of the more successful chips

reproduce more frequently in the next generation and are thus allowed to reconfigure more chips. Except for brief test periods, the robot arms move according to the instructions of the preponderant chip. Random mutations and the exchange of sections between bit strings – electronic sex – help to ensure that the population does not become too inbred.

Including a great number of competing chips inside a robot might seem like a waste of space. Why not find the best solution once and then stick to it? Fine, if there is one. But if the environment in which a robot is operating changes continually. There may not be a single, best solution. For example the best breed of chip might direct the robot to move at high speed to get a particular job done more quickly. But if the robot's surroundings suddenly become hotter, its joints might seize up when it moved at high speed. In that case a minority "species" of chip which moved the robot more slowly, would multiply and take control. No one would be needed to rewire the chip for its new environment. That would be particularly useful if the robot were in an inaccessible place – on the ocean floor, perhaps or in outer space.

Dr. Higuchi hopes that evolvable hardware, as he calls it, will have other advantages. Because the final result is a chip wired in the best way, the approach should be much faster than working out

the best software solution to a problem, and running it on an all-purpose chip. Also, the design should tolerate the sort of small faults that sometimes develop in hardware, since the chips would be continuously rewiring themselves to improve their performance.

The technology for evolvable hardware is already commercially available. Programmable Logic Devices (PLDs) are chips which have many small information-processing units on them, all wired together with fuses that can be switched on or off by sending a sequence of electronic pulses, the bit string, to the chip. They are normally used for testing prototype circuit designs. Initial tests of the evolvable hardware idea using PLDs have been encouraging enough for the researchers to consider taking the next step and putting a whole population of PLDs on a single chip.

To pack so much circuitry together will require the latest in integration technology. But as chip circuitry becomes ever more minute, the large amount of hardware needed to play this electronic version of survival of the fittest may be more than compensated for by increasing versatility. If the approach takes off, it could put circuit designers out of business.

Darwin on a chip

1 **Answer the following questions with "true" or "false" and find evidence in the text:**
   a)   The evolvable hardware does not yet exist
   b)   This technology uses a special kind of chips
   c)   Evolvable software is superior to evolvable hardware
   d)   The technology for creating evolvable hardware is easily obtainable
   e)   This technology might put circuit designers out of business

2 **Translate the words below then use the original words to make sentences:**
   - Hardware
   - Rewiring
   - Circuitry
   - Ocean floor
   - Chip

Focus on language:

1 **The are 10 words from the text hidden in the box below. Find them.**

R	M	A	F	S	E	V	O	L	V	E	L	T	O	F
P	R	O	T	O	T	Y	P	E	Y	C	H	J	U	K
B	R	E	S	E	A	R	C	H	E	R	A	R	T	L
H	O	E	M	X	J	P	H	F	D	Q	R	L	F	O
S	B	F	S	D	E	V	I	C	E	X	D	D	R	E
U	O	X	O	A	R	S	P	D	A	R	W	I	N	S
A	T	Q	E	Y	R	X	O	E	R	T	A	O	I	J
N	X	O	T	C	I	R	C	U	I	T	R	Y	O	R
I	F	U	E	N	V	I	R	O	N	M	E	N	T	T
L	E	Z	T	O	X	Z	E	E	O	F	X	E	Z	Y

2 **Match the following words with their definitions:**

1. Microprocessor	A) Changing an electrical connection
2. Environment	B) Devices that easily change their configuration
3. PLDs	C) Something that has the ability to improve over time
4. Rewiring	D) The surrounding area
5. Evolvable	E) An integrated circuit capable of performing certain tasks

Interpretation:

1 **Read the text again carefully and then answer the following questions:**

1. What does the author mean by "scientists love to plunder the biological world for new ideas"?
2. How are Dr. Higuchi and his colleagues going "one step further" than other researchers?
3. What is the role of the bit string?
4. Why aren't the chips that make a robot work all the same?
5. Why is evolvable hardware superior to an all-purpose chip?
6. How will the problem of fault tolerance be overcome?
7. How has Dr Higuchi changed the use of PLDs?
8. Why does the author refer to the technology as "this electric version of survival of the fittest"?

Darwin on a chip ➤

2 Work in pairs. Discuss with your partner about one of the following topics:
  a) The reason why hardware needs to evolve.
  b) The means researchers use for developing hardware.

Response:

1 Write a 250 words essay about how you think computers will evolve in the future.

LESSON 3

2 Digital Research bounces back

Try answering the following questions:
- What do you know about Microsoft?
- Predict what the text is about
- Read the first two paragraphs of the text and answer the following questions:
  ⇒ Does Microsoft have a rival?
  ⇒ Is Microsoft the biggest software company in the world?

Focus on content:

Now read the text:

Microsoft may be one of the biggest software companies in the world, and its stranglehold on the PC operating system market so complete that competition seems irrelevant, but the previous giant of the ring, Digital Research, is still in there fighting its corner.

By all accounts it is making things hard for Microsoft, in technological terms if not in brute percentage point of market share.

Proving that no company is unassailable, some features which PC users will welcome, and which are reported to have put Microsoft on the defensive about what will appear in its own MS-DOS 5, not due until the next year.

Two of the most obvious features of DR-DOS extend the capabilities of the system, both as a tool for network workstations and in general management and appearance. The latter, in particular, will appeal to those who like the idea of graphical user interface (GUI) to the operating system as well as the applications and desktop, as is given with Microsoft's Windows 3.0.

Now becoming a requirement for software, a GUI-based wimps (window, icons, mouse pointer system) interface to the operating system makes many operations clear and easy, even for the uninitiated. The GUI is called up by keying in

Viewmax, which places the user directly in that new familiar environment.

The typical icons appear on the display; the opening set are folders for the various disk drives in the machine. The rectangular cursor is simply positioned over the folder icon required, either by mouse or with the cursor control keys.

Opening a drive folder brings up the drive's contents, with further folder icons for directories, applications and data files.

The important thing or many users is that clicking on an application icon will automatically load and run it, so there is no need to resort either to command line programming, with all the problems of defining the application's path correctly, or to one of the many disk management utilities. Once finished leaving the application in the normal way will bring the user back to the Viewmax environment.

Through it has fewer functions, this makes a reasonable substitute for Windows 3.0 in many cases, as all the expected windowing capabilities are included. It is one of the easier ways of working with a DOS environment and a considerable advance on anything currently available MS-DOS.

Digital Research bounces back ➝

1 **Read the following statements. Decide if they are true or false.**
A) Microsoft is the only Software Company in the world.   **True / False**
B) Microsoft produces DR-DOS 5 and MS-DOS is produced by Digital Research.   **True / False**
C) GUI means graphical user interface.   **True / False**
D) GUI complicates the work with computers.   **True / False**
E) To open a folder you must position the rectangular cursor over the folder icon required.
    True / False
F) Digital Research is competing with Microsoft.   **True / False**
G) MS-DOS 5 is due to appear at the end of this year.   **True / False**
H) The uninitiated ones find GUI hard to use.   **True / False**
I) You can't call up GUI by keying in Viewmax.   **True / False**
J) Opening a drive folder brings up the drive's contents, which does not contain folder icons for directories.   **True / False**

2 **Answer the following questions.**

1.   What is DR-DOS 5 and MS-DOS 5?
2.   When is MS-DOS due to appear?
3.   What is GUI and how is it called up in Viewmax?
4.   Who is the rival company of Digital Research?
5.   What does DR-DOS 5 introduce?
6.   What are the two most obvious features of DR-DOS 5?
7.   Where does Viewman place the user?
8.   Where will the typical icons appear?
9.   What is important for the users?
10.   Where do you put the mouse cursor to open an application?
11.   Has Microsoft been successful? Justify your answer!
12.   How is digital research trying to make a comeback?
13.   Which feature of DR-DOS 5 is aimed at users interested in GUI?
14.   What is Viewmax?
15.   How do you obtain the software you need?

Focus on language:

1 **Give synonyms for the words in the box:**

> Stranglehold, feature, requirement, uninitiated, environment, capability, company, graphic, interface, display

2 **Match the following abbreviations with their meaning:**

A.	CD-ROM	1.	World Wide Web
B.	IT	2.	Random Access Memory
C.	DVD	3.	Local Area Network
D.	HTML	4.	Compact Disk Read Only Memory
E.	LAN	5.	Information Technology
F.	RAM	6.	Hyper Text Markup Language
G.	WWW	7.	Digital Video Disk

Digital Research bounces back ➤

4 Fill in the gaps in the text with the given words.

Microsoft was founded in Albuquerque, New Mexico in 1975 by Bill Gates and Paul Allen, under the company name Microsoft, to ....(1) and sell BASIC interpreters. The name "..........(2)" (short for microcomputer software) was used by Bill Gates in a letter to Paul Allen for the first time on November 29, 1975. "Microsoft" became a registered ....(3) on November 26, 1976. Microsoft's key moment came when in the late 1970s, IBM was planning to enter the personal ....(4) market with its IBM Personal Computer (PC), which was released in 1981. IBM first approached Microsoft about its BASIC and asked them for an operating ....(5). Since Microsoft did not have an OS, they suggested CP/M from ....(6) IBM then approached Digital Research for a .... (7) of CP/M. Microsoft licensed a cloned design of CP/M called Quick and Dirty Operating System, from Tim Paterson's Seattle Computer Products in order to sell it to IBM as the standard operating system for the IBM PC. Microsoft ....(8) purchased all rights to QDOS for $50,000, and renamed it MS-DOS (for Microsoft Disk Operating System). Later, IBM discovered that Gates' operating system could have ....(9) problems with CP/M, contacted Kildall, and in exchange for a promise not to sue, made an ....(10) that CP/M would be sold along with IBM-DOS when the IBM PC was ....(11) The price set by IBM for CP/M was $250 and for MS-DOS/IBM-DOS it was $40. ....(12), MS-DOS/IBM-DOS outsold CP/M many times over, eventually becoming the standard. In contracting with IBM, however, Microsoft had ....(13) the rights to license the software to other computer ....(14) as MS-DOS. The early 1980s saw a flood of IBM PC clones, and Microsoft was quick to use its position to dominate the operating ....(15) By marketing MS-DOS aggressively to manufacturers of IBM-PC clones, Microsoft gained unprecedented visibility in the ....(16), even rivaling IBM.

Words:
Digital Research, Microsoft, Obviously, develop, subsequently, trademark, agreement, system, system market, computer, microcomputer industry, infringement, version, retained, vendors, released.

5 Isolate the words in the following word-snake:

1 Discuss with another student what company (Microsoft, Digital Research or IBM) you think that has the supremacy on the market.

2 Talk with another student and find out what you know about MS-DOS.

1 Read the text again and sum it up in 100-120 words.