UKRAINE and Computer Science

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1. About Ukraine
GENERAL INFORMATION

- Population: 49,811,174, Ukraine ranks fifth in Europe after Russia, Germany, Italy, and United Kingdom
- Total area: 603,700 square km (slightly smaller than Texas, second-largest in Europe after Russia, larger than France, Spain and Sweden)
- Border countries: Belarus, Hungary, Moldova, Poland, Romania, Russia, and Slovakia
- 98 Universities, 46 Academies and 62 Institutes, the biggest is National University “KPI” – 38,600 students
- Total number of students is 1,285,000
## Some comparison data

<table>
<thead>
<tr>
<th></th>
<th>Ukraine</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>11</td>
<td>225</td>
</tr>
<tr>
<td>Population (2000)</td>
<td>49,000,000</td>
<td>281,000,000</td>
</tr>
<tr>
<td>(2050 est.)</td>
<td>37,000,000</td>
<td>403,000,000</td>
</tr>
<tr>
<td>Literacy</td>
<td>98%</td>
<td>97%</td>
</tr>
<tr>
<td>Life expectancy (m)</td>
<td>60</td>
<td>74</td>
</tr>
<tr>
<td>(f)</td>
<td>72</td>
<td>80</td>
</tr>
<tr>
<td>Per capita income</td>
<td>$2,200</td>
<td>$33,900</td>
</tr>
<tr>
<td>Internet Providers (1999)</td>
<td>35</td>
<td>7,600</td>
</tr>
</tbody>
</table>
Climate and Terrain

- Temperate
- Winters vary from cool to cold
- Summers are warm across the greater part of the country, hot in the south
- Consists of fertile plains (steppes)
- Mountains are found in the west, the Carpathians, and in south, Crimean Peninsula
- Highest mountain: Hora Hoverla 2,061 m
Natural resources: iron ore, coal, manganese, natural gas, oil, salt, sulphur, graphite, titanium, magnesium, kaolin, nickel, mercury, timber

Land use: arable land: 58%, permanent crops: 2%, permanent pastures: 13%, forests and woodland: 18%, other: 9% (1993 est.)

Geography—note: strategic position at the crossroads between Europe and Asia, second-largest country in Europe after Russia

Ethnic groups: Ukrainian 73%, Russian 22%, Jewish 1%, other 4%.
POPULATION BY PRINCIPAL TOWNS

• Kyiv (Kiev, capital) 2,616,000
• Kharkiv (Kharkov) 1,618,000
• Dnipropetrovsk 1,187,000
• Donetsk 1,117,000
• Odesa 1,106,000
• Zaporizhzhia 891,000
• Lviv 798,000
• Kryvyi Rih 717,000
• Mariupol 520,000
• Mykolaiv 508,000
• Luhansk 501,000
• Ternopil 235,000
Kiev
Lavre Monastery and Dnieper River - Kiev
Shevchenko University - Kiev
Shevshenko Park and Statue - Kiev
American Embassy - Kiev
St. Volodymir’s Cathedral - Kiev
Religions: Ukrainian Orthodox—Moscow Patriarchate, Ukrainian Orthodox—Kiev Patriarchate, Ukrainian Autocephalous Orthodox, Ukrainian Catholic (Uniate), Protestant, Jewish

Languages: Ukrainian, Russian, Romanian, Polish, Hungarian

Capital: Kyiv

Administrative divisions: 24 regions (oblasti, singular—oblast'), 1 autonomous republic of Krimea (avtomna respublika Krym), and 2 municipalities towns(mista, singular—misto) with oblast status.
NATIONAL SYMBOLS:

- a new National Flag on January 28, 1992 – a horizontally 2-striped flag, blue, signifying the open sky, and the yellow stripe, symbolizing wheat fields
- The State Emblem - the contemporary national coat of arms of Ukraine, Azure or trident, is the most ancient
The Prince Oleg mounted the Kyiv throne in 882, and he became the ruler of Kyiv Rus.

The process of forming the Old Rus State finished in the beginning of 11th century under Yaroslav Mudriy.

Kyiv Rus of 1237 suffered the forays and a Horde reign of Mongol-Tatar Hordes of Batyi continued for more than two centuries.

The appearance of Cossacks played an outstanding role, they defended their land and guarded its south boundaries against Turkey-Tatar aggression and created military-political organization: Zaporizhzhian Sich in 16th century.
✓ 19th century - Russian monarchy occupied the Eastern Ukraine including Left and Right Bank and South Region
✓ The end of World War I – Civil War in Russia, creation of Tsentralna Rada and attempt for Ukrainian autonomy, a cruel repression of this attempt
✓ About 4 million Ukrainians died or were sent to the concentration camps during the famine of 1932-1933 and mass repression of Stalin in USSR, 1937-1938
✓ September 1939 - Red Army crossed the river “Zbruch” and Western and Eastern Ukraine were joined
✓ 1941-45 about 6 million Ukrainians served in the armed forces in World War II, and about 3 million died
The Way to Independence

- Spring of 1985 - Reforms initiated by Mikhail Gorbachev
- 1989 - the political strikes in Donbas
- Spring of 1989 - the first free elections
- July 16, 1990 - the Parliament adopted the Declaration of State Sovereignty of Ukraine
- August 19’91 - an attempt of striving to turn the country life to the state before 1985
- August 24’91 - the extraordinary session of the Supreme Council of the USSR approved “The Bill of Independence of Ukraine”
December’ 91

✓ The referendum on confirmation of “The Bill of Independence Announcement of Ukraine” gathered a positive response from 90.3% people
✓ Leonid Kravchuk became the first President of Ukraine
✓ Borys Yeltsin, Leonid Kravchuk, and Stanislav Shushkevych announced at the meeting in Belovezhskaya Puscha, Belarus that the USSR no longer existed as a subject of international law and geopolitical reality, Ukraine became an independent sovereign state
ECONOMIC—OVERVIEW

- The eastern and southern parts of Ukraine are highly industrialised, the defence industry accounts for a large share of industrial production.
- The western part of the country is overwhelmingly agricultural.
- Currently 25.3 percent of the work-force is employed in agriculture and 28.4 percent in industry.
- In all, the private sector generates about 40 percent of Gross Domestic Product.
Ukraine’s economy in 2001 - 2003

• **2001** - the gross domestic product (GDP) has increased by 8%
• **2002 forecast** - GDP growth to 4.5%
• **2003 forecast** - GDP will again speed up, to 6%

These dynamics of economic growth are influenced by a variety of factors: on the one hand, shrinking of the global economy, and on the other hand, continued growth of domestic demand.
Pioneers of Computers in Ukraine

• 1951-53 the first stored program computer MESM in Ukraine, Soviet Union and continental Europe was created by S.Lebedev and V.Glushkov

• In 60’s and 70’s the Kiev Cybernetics Institute was founded by V.Glushkov and computer industry manufactured Promin, MIR-1, MIR-2,MIR-3, Dnieper,Dnieper2, Neva, Iskra125, Pirs nd other
SCIENTIFIC EMIGRATION

➤ After destroying of the basis for social and economical development Ukraine had lost more than three million of people
➤ More than 5 million people are looking for refuge abroad
➤ Scientific emigration is a big problem for Ukraine, see next two slides
Number of Scientists in Ukraine, thousands

- 1991: 449,8
- 1993: 345,8
- 1995: 293,1
- 1997: 233,3
- 1998: 214,9
- 1999: 199,4
Number of PhD’s who left the Ukraine, percentage
Recent News

- Signed Plan of Activity for Ukraine oncoming to NATO, Summit’02, Prague
- Victor Yanukovych as new Prime Minister was approved by Ukrainian Parliament
- Parliament passed a law bill against money-laundering
- Rate of inflation was .7% last November
- Slovakian President Rudolf Schuster started to visit Ukraine
2. About Ternopil, TANE and ICIT

TERNOPIL GEOGRAPHY

- Population 1,200,000, Ukraine rank is 19th
  Maine – 1,274,923 US rank is 38th
- Ternopil region is 205km long and 110 km wide,
  area is 13,800 square km, Maine’s area is 86,030 sq km
- The highest place is 334 m, Maine – 1,606 m
- The longest cave is Optymistuchna, 100km, the
  third world place after Phling-Ridge in the US,
  290km and Helloh in Switzerland, 119km
- Record high +36 C, record low -36 C,
- Maine record high +41C(105F), low -44C(-48F)
- The main rivers are Dnister, and Prypyat.
- Region is situated in the forest-steppe land, forests covers approximately 12%.
- The largest and nicest lake, 400 hectares is in Ternopil-city, Maine-the largest - 30,316 hectares.
- The largest cities are Ternopil 235,000 and Chortkiv 40,000, and Kremenets 35,000.
- Region consists of 16 counties, Maine – 16 counties.
- There are 4 Universities in Ternopil-city.
SHORT HISTORY

1540 - the stone castle –the base of Ternopil-town was built on river Seret

1548 - the town got Magdeburg low

From XIV to XVIII century Ternopil region was under the rule of Poland

1772 the main part of Ternopil region was captured by Austria

1919 Poland established again its domination on the Region, more than 80,000 people emigrated from Region to Canada, South America, USA

September 1939 - Red Army crossed Zbruch and Western and Eastern Ukraine were joined
Sunday Morning - Ternopil
Ternopil Academy of National Economy

- 1966 - was founded with 75 students
- At present-over 20,000 students, 10,000 - on Campus
- Over 500 faculties are employed
- There are three PhD Councils
- 13 Institutes and 2 Centers
- 49 Departments including 15 Fields, and 11 TANE’s branches
The Institute for Computing and Information Technologies (ICIT)
ICIT

• was created in 1994
• 1360 undergraduate and graduate students, 702-full-time, 658-part-time
• Economic Cybernetics (‘90), Computer Engineering (’97), Computer Science (‘00)
• 68 faculties and 36 staff
• 7 Depts in Campus and 4 remotes Depts
• PhD council in Computing
• Since 1998 IEEE Student Branch
ICIT Students between Classes
An ICIT Computer Lab
ICIT Activities in 2001-2002

- Courses’“Intensive Java” and Natural Language Processing for ICIT’s majors, Allen Tucker, Bowdoin College
- Two years M.Sc Program in William&Mary College, Andrew Fedorov and Andrew Kot
- Completed INTAS Project 97-0606
- Continued NATO CLG Project with Belgium team
- Started NATO CLG Project with Spanish team (’02)
- Started Bilateral Project with Chinese team (’02)
- Cont-ed two Gov.- Projects in DSN & Knowledge Base
- Publications, total - 81 including Articles (38), Conf. Proceedings (31), Textbooks (12)
- Obtained Ph.D Degrees – 4
- Workshop IDAACS’01 in Foros, Crimea
Picnics in the forest... for serious celebrations
A 5th grade class in Ternopil
3.1. Project’s Plan and IDAACS’03 overview

- **Project title**”Design of Modern Academic Program in Computing for Ukrainian Universities”

- **Project goal** is to develop the new Academic Program of study leading to a Bachelor/Master Degree with focus area in Computing at the ICIT according to ABET-2000 policies and Curricula 2001 requirements
The Problem

• Nations in the former Soviet Union, including Ukraine, need to modernize their university curricula in computer science, and align them with curricula in the US and other Western nations.

• These universities do not normally accommodate students taking courses away from home – they have no transfer credit policy.

• As a result, opportunities for intercultural exchange and growth of Ukraine in the international community are severely limited.
Project Strategy

• Research CS’s Curriculum development in the US.
• Develop a model for modern curricula in CS that includes instruction in English as a second language (ESL).
• Review CS’s syllabi in U.S. universities, modify courses for a new English Department of Computing in Ukraine.
• Review current library and laboratory systems, investigate new technical facilities and learn teaching methodology.
• Review current systems of credit transfer among U.S. and other universities that support study away.
• Develop a strategic plan to implement a CS Program at some “pilot” Ukrainian universities.
Project’s Outcomes

It will improve CS education in UA in the following ways:

• Preparation of graduates to become experts in CS using contemporary US education standards
• Contribution to the overall reform of the educational system in Ukraine.
• Description of the methodology for curricula development according to U.S. standards as a model for UA universities.
• Increased cooperation between UA and U.S. universities
• Adaptability of results to universities in other former Soviet countries
The following challenges are also considered:

• The uncertain economic situation of Ukraine makes it difficult to underwrite the changes that will be needed to implement these reforms.

• It is difficult for Ukrainian undergraduate and graduate students to obtain support to travel to Western nations to prepare for teaching this curriculum.

• It is difficult for Western faculty and students to travel to Ukraine for academic collaboration and study, due mainly to the language barrier.

Organized by Institute of Computer Information Technologies, Ternopil Academy of National Economy

in cooperation with Institute of Computer Technologies, Automation and Metrology, National University “Lviv Polytechnic”
Submission

• Prospective authors should submit 3 MS Word pages of the abstract (in English only) by e-mail: idaacs@tanet.edu.te.ua.

Deadlines:

• Abstract: 15 Jan 2003
• Acceptance 01 Mar 2003
• Camera-ready: 01 May 2003
• Details of submissions and all information concerning abstract preparation for IDAACS'2003 can be found at the web site

Http://www.idaacs.ssft.net/
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– Malinovskyy B.N. Glushkov Institute of Cybernetics, Kyiv, Ukraine