

# WOMEN IN S & T

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# Women in World...

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## □ The world consists of ....

- 51% women
- women from all walks of life
- women make up 40% of the workforce

(... During the 1980s and 1990s women's participating in labour markets worldwide grew substantially.)

# Women in Workplace

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*We need you to change this trend!..*

**But...**

- ❑ Women are more likely to work in low productivity jobs in agriculture and services.
- ❑ Women share in industrial employment is much smaller than men's and has decreased over the last ten years.
- ❑ Out of the total number of employed women in 2006, **% 40.4** worked in agriculture, **% 42.4** in services
- ❑ **% 17.2** of all women working were in the industry.

*(Global Employment Trends for Women, Brief, March 2007, ILO)*

# Women in Workplace

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- ❑ IT have been intensively used during the last 30 years.
- ❑ Since IT contributes immensely to the process of collecting, classifying, preserving, and transmitting information, it has become a vital part of many work place.
- ❑ IT have been used in almost all branches of production and especially in the service sector and, have changed not only the productive processes but also the existing **employment patterns**.
- ❑ IT have created **new sectors**. Moreover, it has created **new occupations** such as computer programmers and system analysts.

# Women in Workplace

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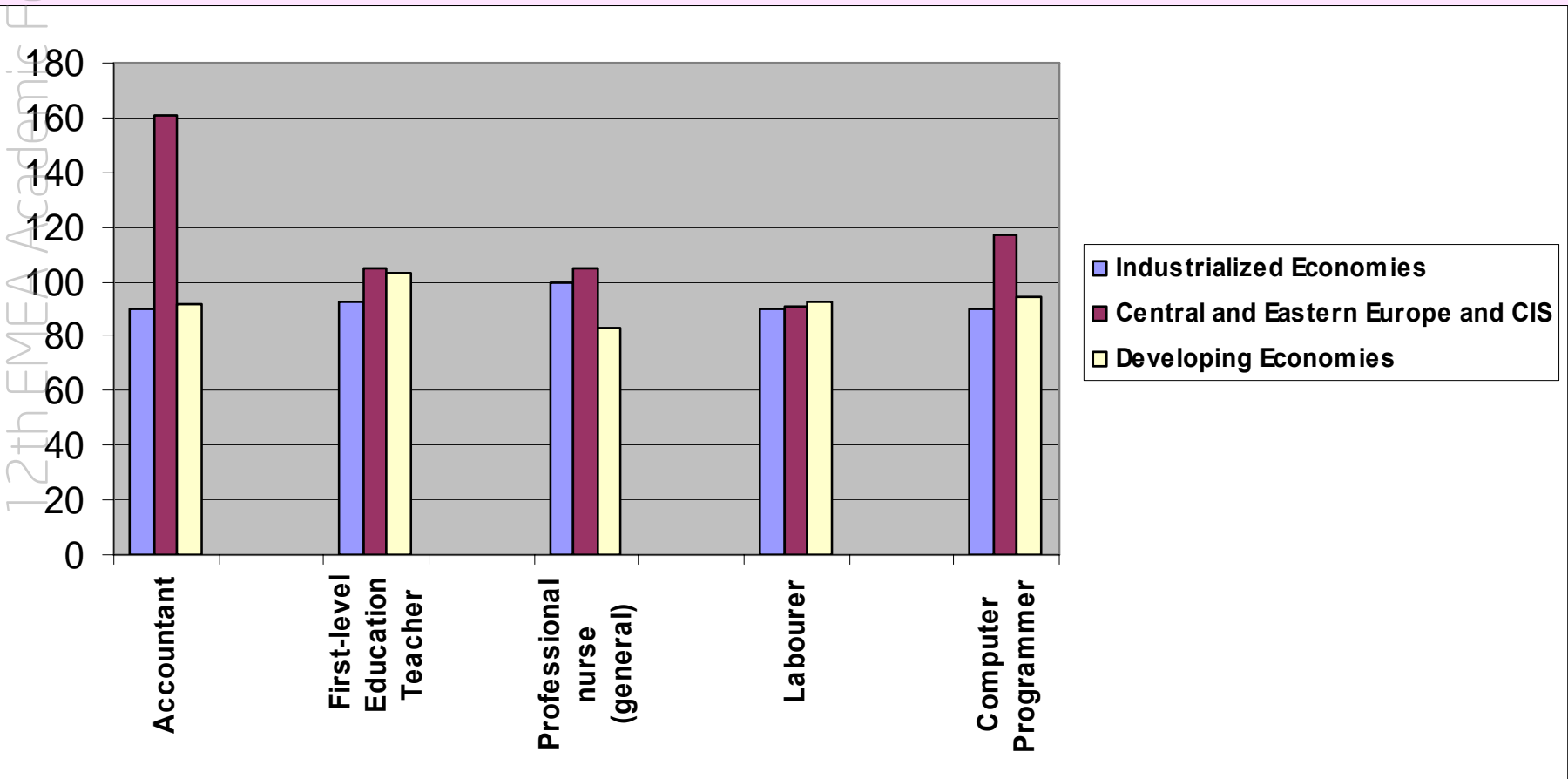
## IT Professions

- ❑ Systems Analyst
- ❑ Business Analyst
- ❑ Project Manager
- ❑ Developer
- ❑ Network Specialist
- ❑ Infrastructure Specialist
- ❑ Database Analyst
- ❑ Database Administrator
- ❑ Network Security Specialist
- ❑ Solution Architect
- ❑ Help Desk
- ❑ Training Coordinator
- ❑ Project Management Office Manager
- ❑ Program Manager
- ❑ Vice-President of IT
- ❑ Chief Technology Officer

# Women in Workplace

European Commission recently published findings showing that the pay gap between men and women has remained **unchanged** at **% 15** across all sectors.

12th EMEA Academic Forum



# Women in Higher Education

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- ❑ In 2003, less than one-third of countries reported gender parity among university students enrolled in **first degree courses** (leading to a Bachelor's degree or similar qualifications).
- ❑ The remaining countries are split almost evenly into two groups favouring either women or men in terms of enrolment at this level.
- ❑ Yet, when looking specifically at enrolment in science and engineering (S&E) fields, only three out of 47 countries with available data for this breakdown attained gender parity.
- ❑ In 43 countries (91%), men clearly outnumber women in these fields of study.

# WOMEN'S JOURNEY

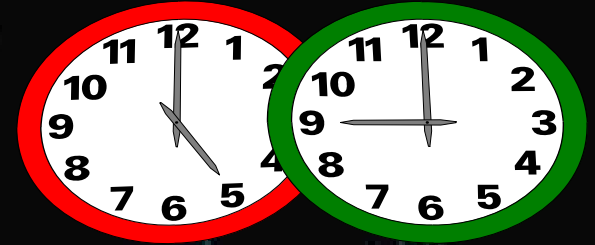
## THE HIGH SCHOOL YEARS





# THE UNIVERSITY YEARS

**B.Sc.**



# Women in Higher Education

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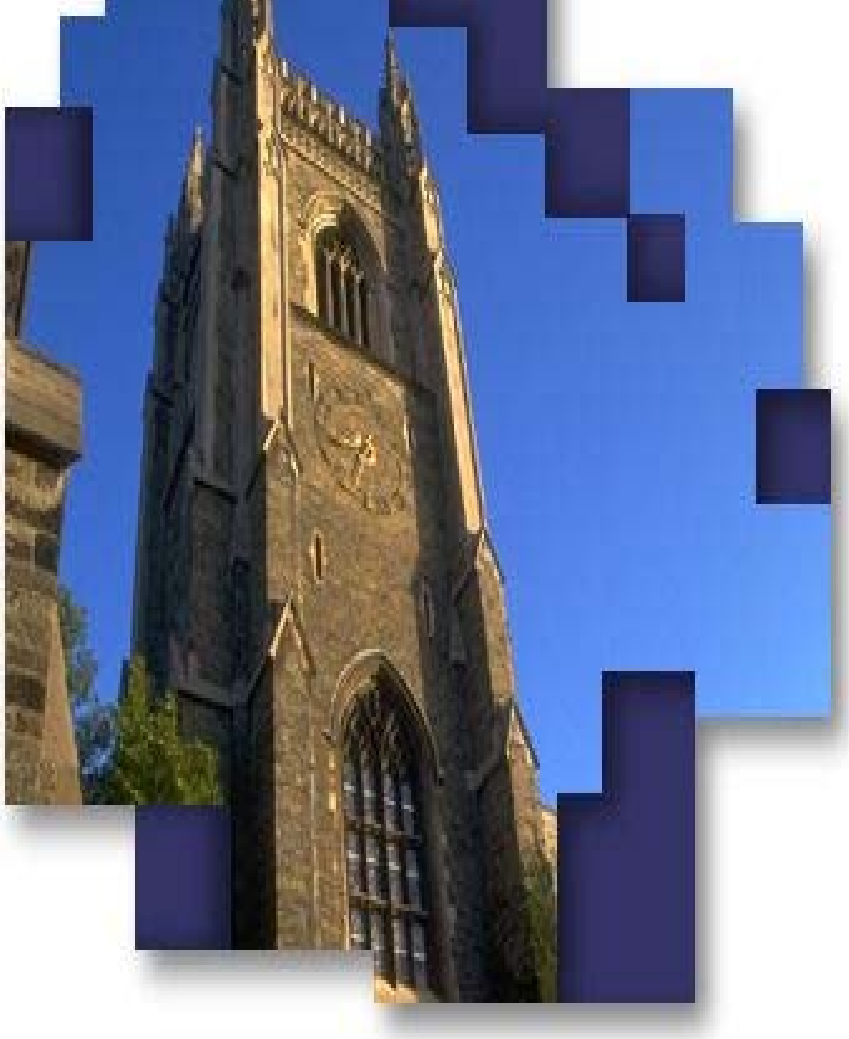
- ❑ In terms of **first degree graduates**, almost one-quarter (**22%**) of the countries report gender parity.
- ❑ In more than one-half of the countries (**54%**), women represent over **55%** of the total graduates at this level. These shares are higher than those for enrolment. Yet, when the analysis is limited to S&E fields, men once again outnumber women in terms of graduates.
- ❑ At the next stage of higher education, gender parity is reported among **second degree graduates** (e.g. Master's degree) in almost one-third of the countries.

# Women in Higher Education

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- ❑ All available evidence shows that the **gender gap** intensifies at the advanced levels of higher education.
- ❑ the indices for **engineering** graduates do not reveal any surprises: the overwhelming majority of graduates are men. Therefore, female participation in engineering studies is, on average, less than one-half of the total female participation in first degrees across all fields.
- ❑ In the case of **computing**, it is fair to say that universities are still 'manning' the information society. computing is higher or equal to **one** in only **8%** of the countries but lower than **0.25** in **18%**.
- ❑ The average of 0.55 is slightly higher than that for engineering, but still shows a high predominance of men in this field.
- ❑ In life sciences, almost **three-quarters** of countries (**73%**) higher or equal to **one**, with an average of **1.1**. Female graduates are therefore clearly **predominant** in this field, which includes **medicine**.

U<sub>of</sub>T



MBA



# Women in Higher Education

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- ❑ The downward trend in the share of women graduating from the previously discussed levels of education clearly results in male predominance at the level of doctorates, **PhDs or other advanced research degrees**.
- ❑ Only **20%** of countries have significantly more women than men graduating from doctorate programmes.
- ❑ This is the case for just **8%** of countries, when looking specifically at S&E fields.
- ❑ Overall, **17%** of countries have reached gender parity at this level, with no significant variations reported between S&E or all fields of study.

# Women in S & T

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- ❑ In S&E fields, similar patterns are found for first and second degree graduates (women are slightly better represented among the latter in more countries).
- ❑ This is not surprising because second degrees appear to be increasingly important in S&E careers.
- ❑ At the same time, the fact that in many countries there are proportionally more female second degree graduates than at the first degree level seems to strengthen the hypothesis that women still perform better and drop out less than men, particularly in the early stages of higher education.

# Women in S & T

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- ❑ It is estimated that women constitute only slightly more than one-quarter of the world's researchers.
- ❑ In 34 of the 89 countries with available data, women represent less than **30%** of researchers.
- ❑ In 69 countries, women represent less than **45%** of researchers.
- ❑ Only **17** – or **18%** of countries – have achieved gender parity. However, significantly more women than men are working as researchers in 3 countries.

# Women in S & T

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- ❑ Latin America and the Caribbean: **46%** of researchers are women. One-third of the countries have achieved gender parity.
- ❑ Asia: Women constitute only **15%** of researchers. **28%** of countries achieved gender parity in 2003.
- ❑ South Asia: Less than **30%** of researchers are female in all countries, the region's Arab States as well as Japan and R. of Korea.
- ❑ South Asia: Has the lowest rate of **12%**, mostly due to India, where only **10%** of researchers are women.
- ❑ South East Asia: The total share is **42%**.
- ❑ Europe: **32%** of researchers are women, with only five countries reaching gender.
- ❑ Africa: It is estimated that about **29%** of researchers are women.



# Women in S & T

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- ❑ Women are less likely than men to be employed in the private sector (business enterprise) of research and experimental development (R&D) than the public sector.
- ❑ Women account for **28%** of all researchers in the EU.
- ❑ However, this share rises to **34%** for R&D undertaken by government and higher education.

# In Türkiye...

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## 1999-2000

- ❑ Woman student %40.41
- ❑ Kadın öğrencilerin teknik bilimler ve ziraat dışındaki oranları gittikçe yükselmekte ya da sabit kalmaktadır. Sosyal Bilimler ve öğretmenlik eğitimini de kapsayan uygulamalı sosyal bilimler, matematik ve fen gibi alanlarda kadın öğrenci oranları erkeklere yaklaşmaktadır. Dil, hemşirelik dahil sağlık bilimleri ve sanat alanlarında kadın öğrenci sayıları erkeklerden fazladır (TÜSİAD, 2000).
- ❑ Sonuç olarak jeoloji, fizik, jeofizik gibi alanlarda kadın katılımı artsa da, bilgisayar, elektrik, makine mühendisi gibi bölümlerde azalmaya başlamıştır, bu nedenle yükseköğretimde de cinsiyetçi yönelimden söz etmek mümkündür (TÜSİAD, 2000)

# In Türkiye...

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## Women Academician: From %7 to %35,42

- onların da tıpkı öğrencileri gibi en yüksek oranda dil ve edebiyat, sanat ve sağlık bilimleri gibi “kadına uygun” alanlarda toplandıkları görülmektedir.
- Ayrıca kadınların öğretim kadrosu içindeki yerine baktığımızda akademik kariyerin dışında kalan okutmanlık (%56,7) ve uzmanlık (%43,3) gibi görevlerde yoğunlaştıkları görülür. (TÜSİAD, 2000).

# In Türkiye...

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- ❑ In Turkey, public institutions adopted computer based office technology before the private sector in the late 1960s.
- ❑ The first generation is known as those who worked for transferring the applications in this sector to Turkey through the universities after the 1960s. The average age of this group is now 60 or above. There are no women among this group.
- ❑ The second generation covers those whose age varies between 40 and 50. We observe women in this group for the first time.
- ❑ Those between 30 and 40 constitute the third generation and those who are around 30 years old or younger constitute the fourth generation.

# In Türkiye...

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- ❑ The computer sector has rapidly developed especially after the 1980's owing to the developments in computerization of the industry, banking and insurance sectors.
- ❑ The demand for information processing activities such as data entry and software programming has paved the way for the employment of young people who are furnished with appropriate skills.
- ❑ Following public institutions, firms and factories in the private sector extensively began to use computers, which resulted in hiring a considerable number of women.

# In Türkiye...

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- ❑ **Computer-based technology might bring about a new pattern of gender division of labour market in Turkey.**
- ❑ **There are more women in public institutions than in private institutions.**

# In Türkiye...

## The Distribution of Employees in Computer Programming Occupations According to Gender and Occupational Status, Turkey.

Occupational Status	Total number of employees	Women (%)	Men (%)
System analysts	198	77	121
Computer programmers	7,422	3,267	4,155
Data entry clerks	16,149	8,949	7,200
TOTAL	23,769	12,291	11,476

# In Türkiye...

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This research found that...

- ❑ Women in computer programming occupations have a **high share** in this sector as in other high-status male dominated occupations like law, medicine, judgeship, engineering, and teaching.
- ❑ In addition, professional women's presence in computer programming occupations in Turkey is also high compared to similar figures in some other countries like the United States and the Netherlands.



# In Türkiye...

**Distribution of Educational Background of Women by Group, Frequencies and Percentages (between brackets)**

Educational Background	Group I	Group II	Total
Lycee	5 ( 8.5)	29 (41.1)	36 (26.6)
University	48 (81.4)	43 (58.9)	91 (68.9)
Masters and Higher Degree	6 (10.2)	-	6 ( 4.5)
Total	59 (100)	72 (100)	131 (100)
Total of not replied	2	-	2
Column Percentage	44.7	55.3	100

Pearson chi-square = 23.368; df = 6; Asymp. Sig. (two sided) = 0.001

# In Türkiye...

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In this research, researcher examine the **sociological factors**, such as

- Why they were preferred by the IT sector and why they themselves have chosen to work in this sector.
- Many men, thinking that the sector did not provide them with occupational mobility, left the field for other more promising jobs (Donato, 1990: 175 and Wright and Jacobs 1995: 367). Hence new opportunities were opened up for women in the information-processing field.
- Men working in this sector that acquired new skills preferred to transfer from public to private sector institutions and switched to other computer skill related occupations as soon as they found the opportunity to do so. Consequently, many important high-status positions have become available to women.

# In Türkiye...

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- ❑ Republican Regime to the principle of gender equality along with its support of educational policies had been influential in the relatively high representation of women in the fields of science and technology (Durakbaşa, 1998).
- ❑ The ‘positivist world view of Kemalism’ had also been influential in families’ decisions to encourage their daughters to be educated in natural sciences at universities (Köker, 1988).
- ❑ The financial resources invested in sciences in Turkey has been lower in comparison to western countries, therefore, science related fields were less protected by men against women (Acar, 1998: 315).

# In Türkiye...

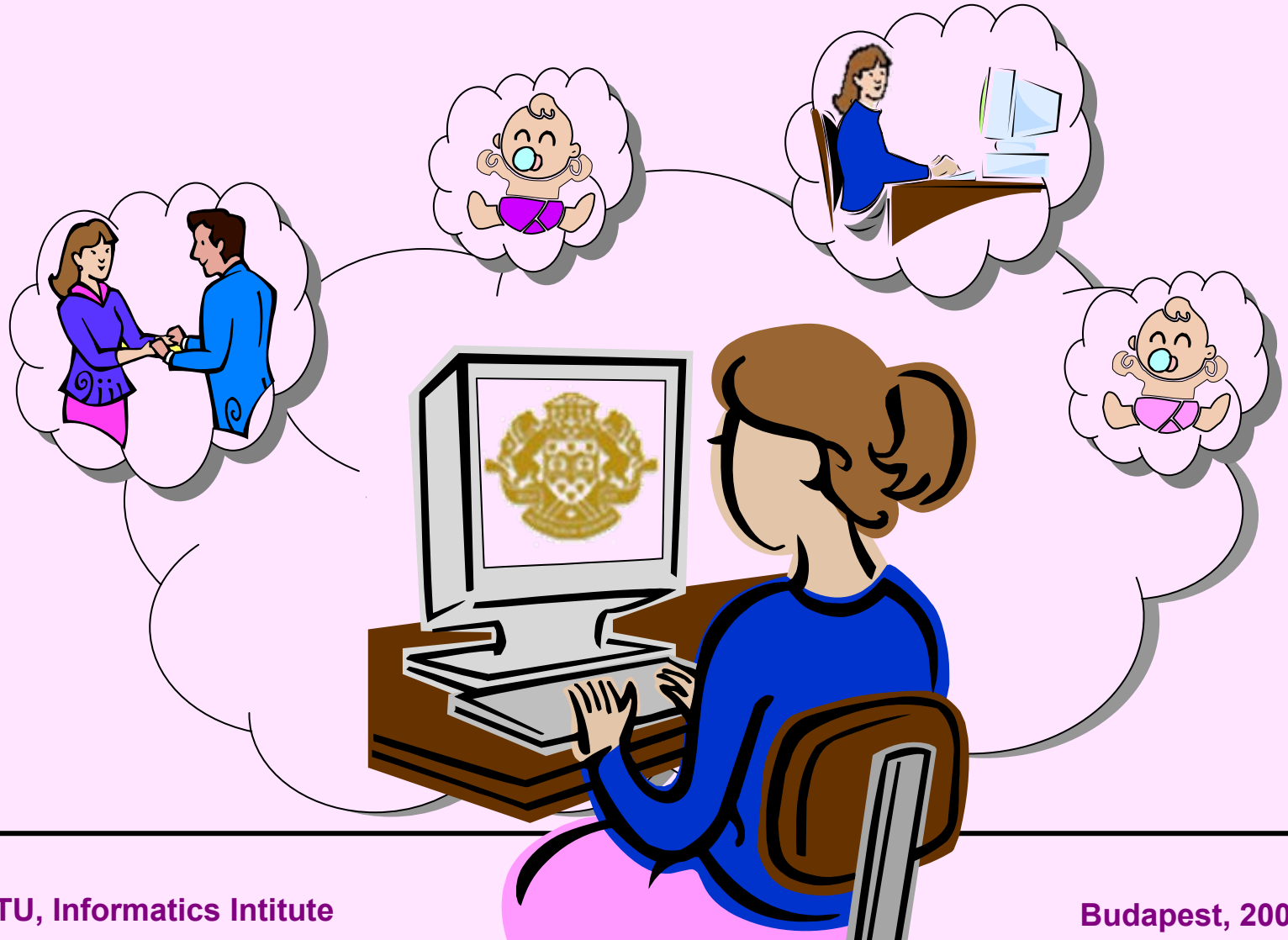
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## Results:

- The majority has graduated from departments of **computer engineering, electrical engineering, industrial engineering, civil engineering, geological engineering, and nuclear engineering**. Those who have graduated from various Faculties of Arts and Sciences are mainly graduates of the **physics, mathematics, statistics and chemistry** departments.
- The **median age** of those women who hold high-status positions in computer programming occupations is **30**.
- The women working in computer programming occupations appear to be **young, university graduates** who were **born and live in urban centers**.
- Their **parents** also appear to be **highly educated**.

These are the most important factors that have contributed to the high incidence of women in the informatics sector.

# THE "JUGGLING" YEARS



# In Türkiye...

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- ❑ **One group reconciles work and family responsibilities without radically redefining their marital roles.**
- ❑ **The second group delays or refuses to marry. Although there is not much difference between these groups in terms of the priority they give to their career development, the women in the second group can now legitimize their staying single for their career development in a society where marriage is still a norm.**

# In Türkiye...

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**Professional women working in computer programming occupations need to**

- ❑ **work hard and become self confident,**
- ❑ **develop pragmatic and practical solutions to make work and home compatible.**
- ❑ **They take decisions and develop strategies to ease the tension that they experience at work and at home.**

# In Türkiye...

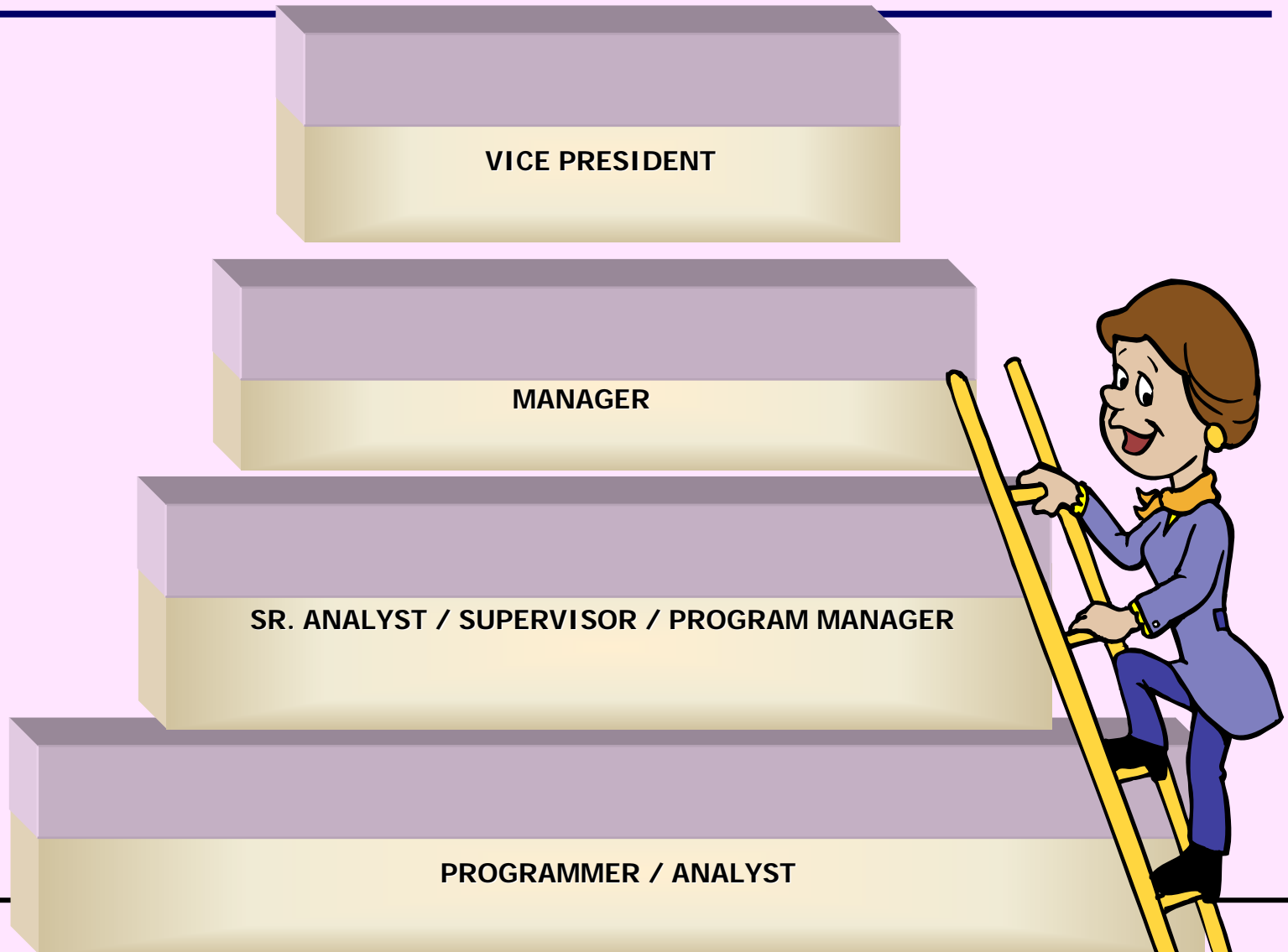
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There are three important strategies:

- ❑ Working hard,
- ❑ Postponing marriage or not marrying at all
- ❑ Managing work without a radical redefinition of their marital roles.

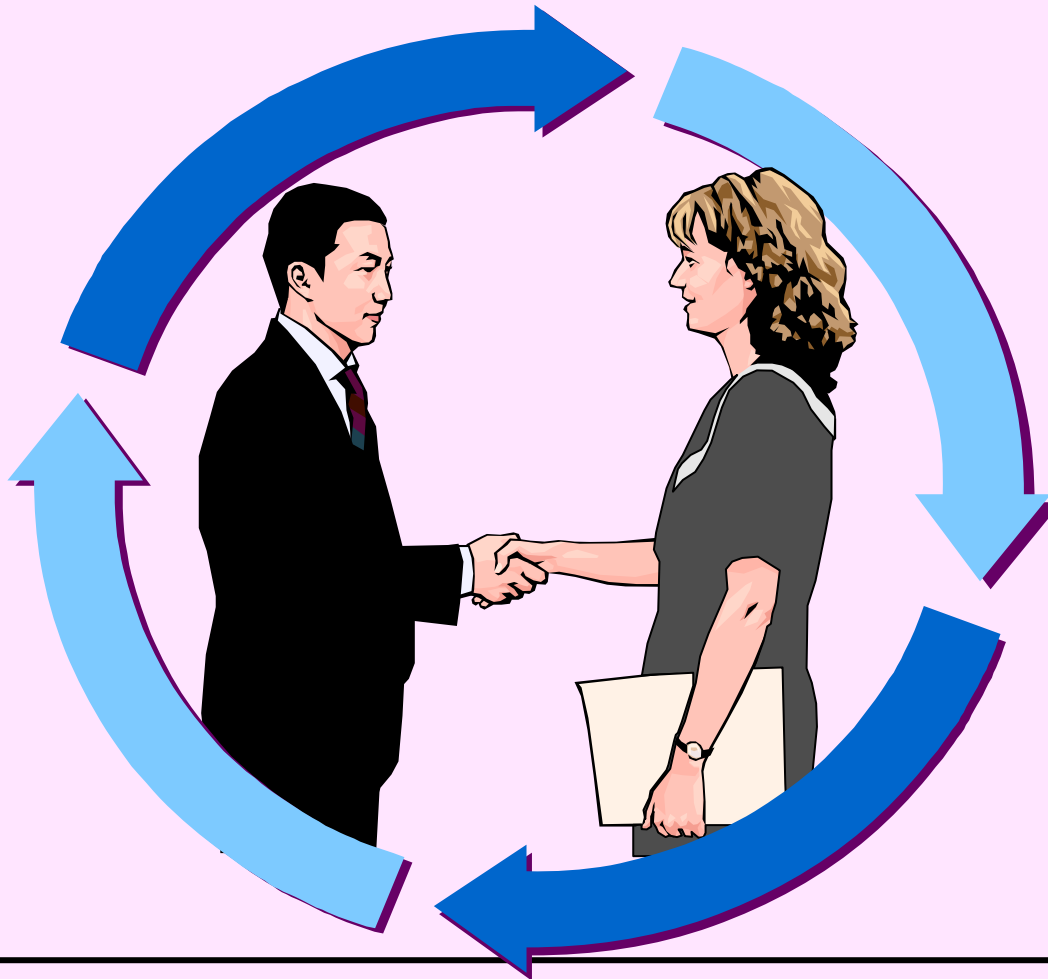


# WORKING YEARS



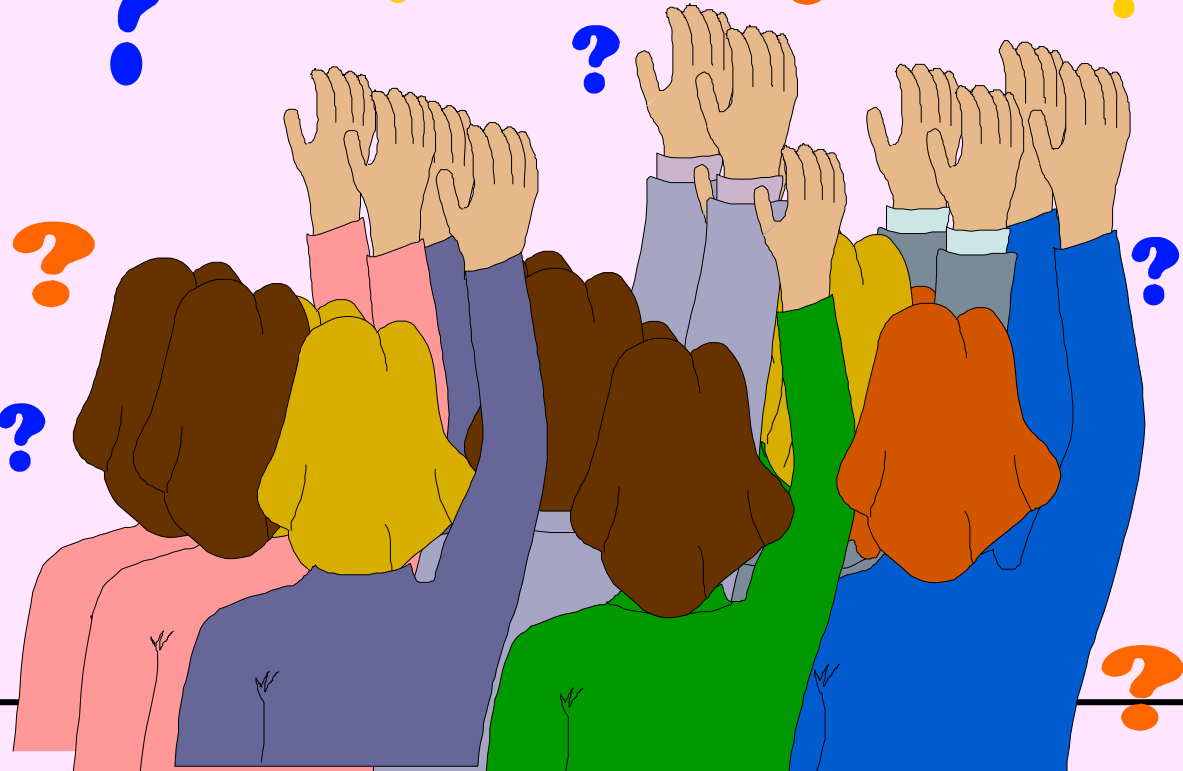
# WORKING YEARS

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**QUESTION AND**

**ANSWER PERIOD**



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# Thanks...