

## Component 4: Introduction to Information and Computer Science

### Unit 10: Future of Computing Lecture 1

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### Topics In This Unit

- Topic I: Trends in Computing
- Topic II: User Interfaces
- Topic III: Cloud Computing
- Topic IV: Social Implications
- Topic V: Ubiquitous Computing

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### Topic I: Trends in Computing

- We can speculate, but we cannot know!
- Past predictions
- Changes in ownership
- Changes in physical size
- Changes in system memory
- Changes in system storage
- Changes in system connectivity

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## Past predictions

- "I have traveled the length and breadth of this country and talked with the best people, and I can assure you that data processing is a fad that won't last out the year."  
Prentice-Hall editor of business books, 1957
- "There is no reason anyone would want a computer in their home."  
Ken Olson, president, chairman and founder of Digital Equipment Corp., 1977

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## Changes in ownership

- Governments in the 1940s
- Businesses in the 1950s and 1960s
- Personal computers in 1970s

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## Changes in physical size



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## Changes in physical size



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## Changes in physical size



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## Changes in physical size



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## Changes in system memory

- 1 KB for early home systems
- 2 or 4 GB common for today's home systems
- Demonstrates Moore's "law": trend showing that the number of components that can be placed on a circuit doubles every two years
- Observation by Gordon Moore, Intel co-founder, in 1965
- Likely to continue through at least 2015

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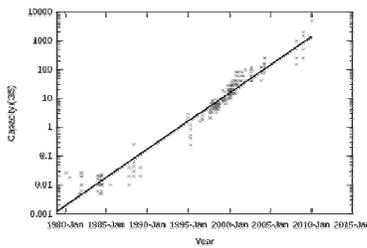
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## Changes in system storage



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## Changes in system connectivity

- Early computers were stand-alone systems
- Connected by telephone lines in 1970s and 1980s
- Internet for personal use through dial-up connections in 1990s
  - Slow speed – 56 Kbps typical
  - Still available today
- Wireless hotspots and WiMAX

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## Topic II: User Interfaces

- Mechanism used to provide data and commands to the computer system
- Mechanism by which the results of computer processes are displayed to the user

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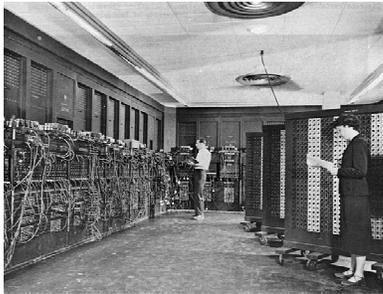
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## Plug-in cables



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## Punch cards



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## Keyboard and video monitor



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## Mouse



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## Touchscreens



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## Tablets

- Commercially available since late 1980s
- Small and thin
- Designed to use without keyboard
- Limited adoption – until recently
- Apple iPad sold over 3,000,000 units in first three months since introduction in 2010
- Is it a trend?

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## Mobile devices

- PDAs
- Telephones
- Internet access
- Will the tablet and mobile device merge?

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## Voice recognition

- Science fiction in the 1960s
- Some support for computer systems
- Mobile device usage
- Vocera

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## Tables and walls?

- Think large
- Why limit ourselves to a computer screen?
- Image a desktop computer being your desktop
- Use a wall for display and touch for control



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## Flexible hardware

- Flexible, ultra-thin displays undergoing development
- Flexible keyboards now available
- OLED displays
- Smart textiles

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