classmate
Date 8-1-2020
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INTRODUCTION

2 significant changes - computer marketplace.
- the virtual elimination of assembly language programming.
- creation of vendor independent operating system.

new set of architectures - RISC critical perf. tech.
RISC- based machines focussed exploitation ILP & cache.

RISC based computers DEC VAX.
performance bar

intel translating 80x86 instructions into RISC like instructions internally.

ARM

the dramatic growth rate 20th century. fan fold.

significantly enhanced the capacity available to the computer
dramatic improvement in cost performance led to new class of computers.

improvement of semiconductor manufacturing
moore's lay.

microprocessor-based computers.
entire range of comp. design.

hardware innovation renaissance in computer design.

hardware renaissance led to 50,000 fold performance improvement. since 1978.

modern programmers to trade performance for productivity.

in place of performance-oriented languages like C and C++, much more programming is done in managed languages like java and scala.

javascript and python gaining popularity.

nature of applications is changing
speech, sound, images, and video

1974 robert dennard -
power density was constant.

simple processor ILP DLP TLP RLP.

2010 intel processor had 1.170 billion devs.

2016 18 billion devs. (if moore's law continued)
1.75 billion devs. (actual)

fig1. ch.1.

classes of computers.

dramatic change in how we view computing, computing applications, computer markets.

five diverse computer markets characterized by different applications, requirements, and computing technologies.

internet of things / embedded computers.

microwaves, washing machine, most printers, networking switches, and all automobiles.

IOT refers to embedded computers that are connected to the internet typically wirelessly. when augmented with sensors and actuators.

IOT devices collect useful data and interact with physical world.

widest spread of processing power and cost.
they include 8bit to 32 bit.
for the high end 64 bit processors

cost 1 penny to 100$.

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PERSONAL MOBILE DEVICES

they are a collection of wireless devices with multimedia user interfaces - such as - cell phones, tablet computers,...

cost is a prime concern.
a few hundred dollars.

energy efficiency is important,
ouse of batteries.

applications on PMDs are often web-based and media oriented.

flash memory.

PMDs can run externally developed software.
share many characteristics of desktop computers.

DESKTOP COMPUTER

lowend notebooks that sell for under 300$ and high end (heavily configured) workstation that may sell for $2500.

optimize price performance.

SERVERS

provide large-scale and more reliable file and computing services.

availability, scalability, and efficient throughput

CLUSTERS AND WAREHOUSE SCALE COMPUTERS.

growth of SAAS. & social networking, video viewing and sharing, multiplayer games, on-line shopping.

price performance is important. and power critical to WSC. $40 million.

www.top500.com.
Site for supercomputers.

grand challenge problems.