

# Computer(s) in Your Pocket

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# Evolution of Computers

- 1965 Mainframe IBM, Fortran
- 1975 Terminal DEC, Pascal
- 1985 Desktop Microsoft, Apple
- 1995 Laptop Internet, Java
- 2005 Smartphone Android, iPhone

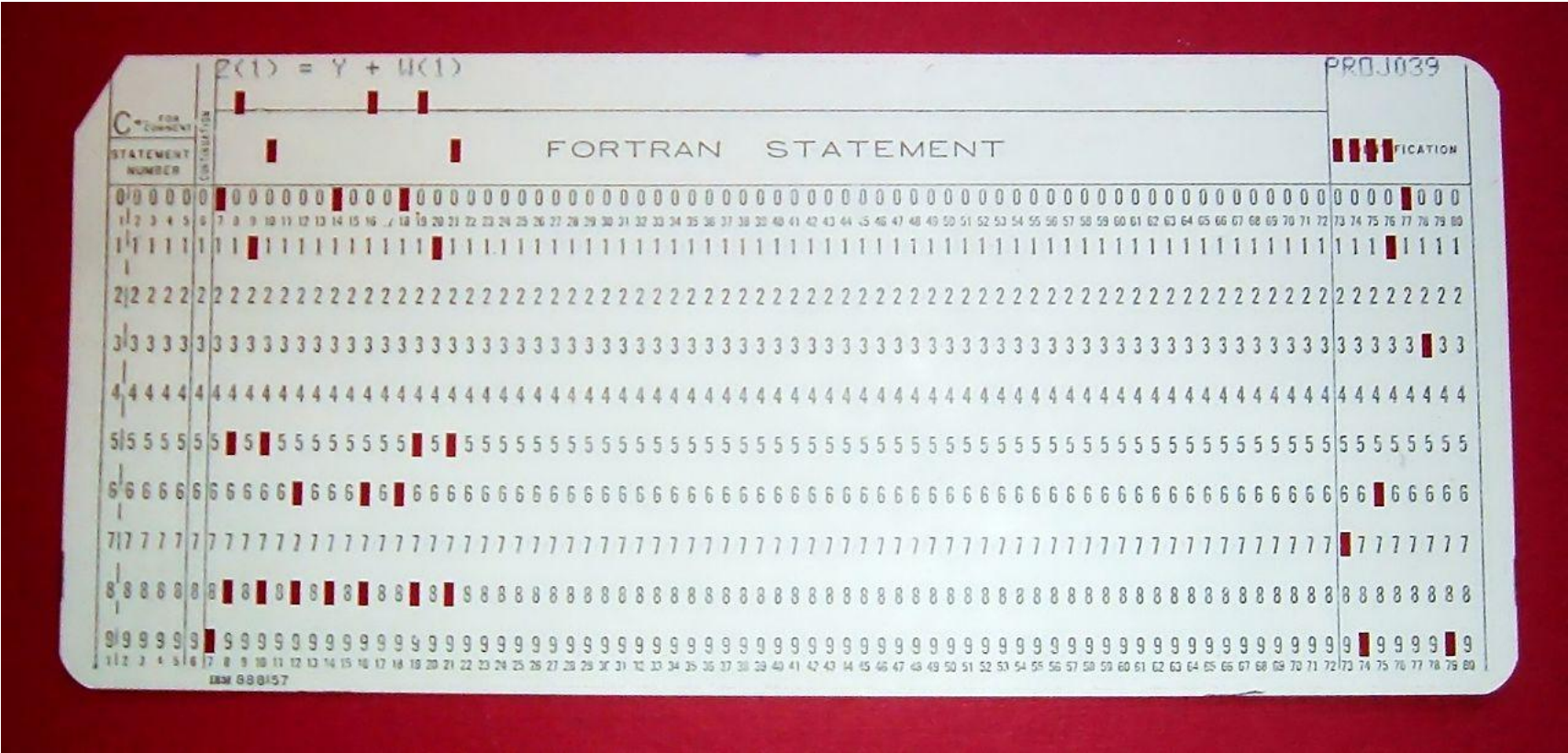
# 1965 Mainframe -- one processor, one user



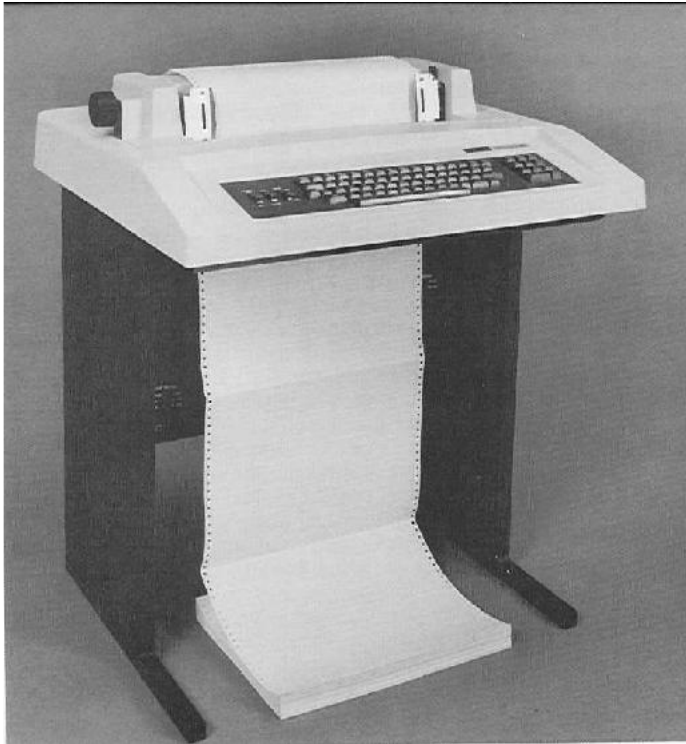
# FORTRAN

```
COMMON /SDSTI/ PS, VC337, V5, V6
C COMPUTE THE NON-CONSTANT GAIN
  GAIN = GCONST + V1 * GIVEN + ABS(V1) * GODD
  V2 = V1 * GAIN
C CLIP OUTPUT PER POWER SUPPLY EFFECT
  IF (V2 .GT. PS) V2 = PS
  IF (V2 .LT. -PS) V2 = -PS
C COMPUTE THE POWER SUPPLY
  IF (V2 .GT. VC337) GO TO 1
  VC337 = VC337 * DECAY
  GO TO 2
1 VC337 = VC337 + (V2 - VC337) * CHARGE
2 CONTINUE
  V3 = VC337 * PUNCH
  V4 = V3 - PSD * V5 - PSE * V6
  V5 = V5 + DELTA * V4
  V6 = V6 + DELTA * V5
  PS = PSF - PSB * B5
  SDST = V2
  RETURN
  END
```

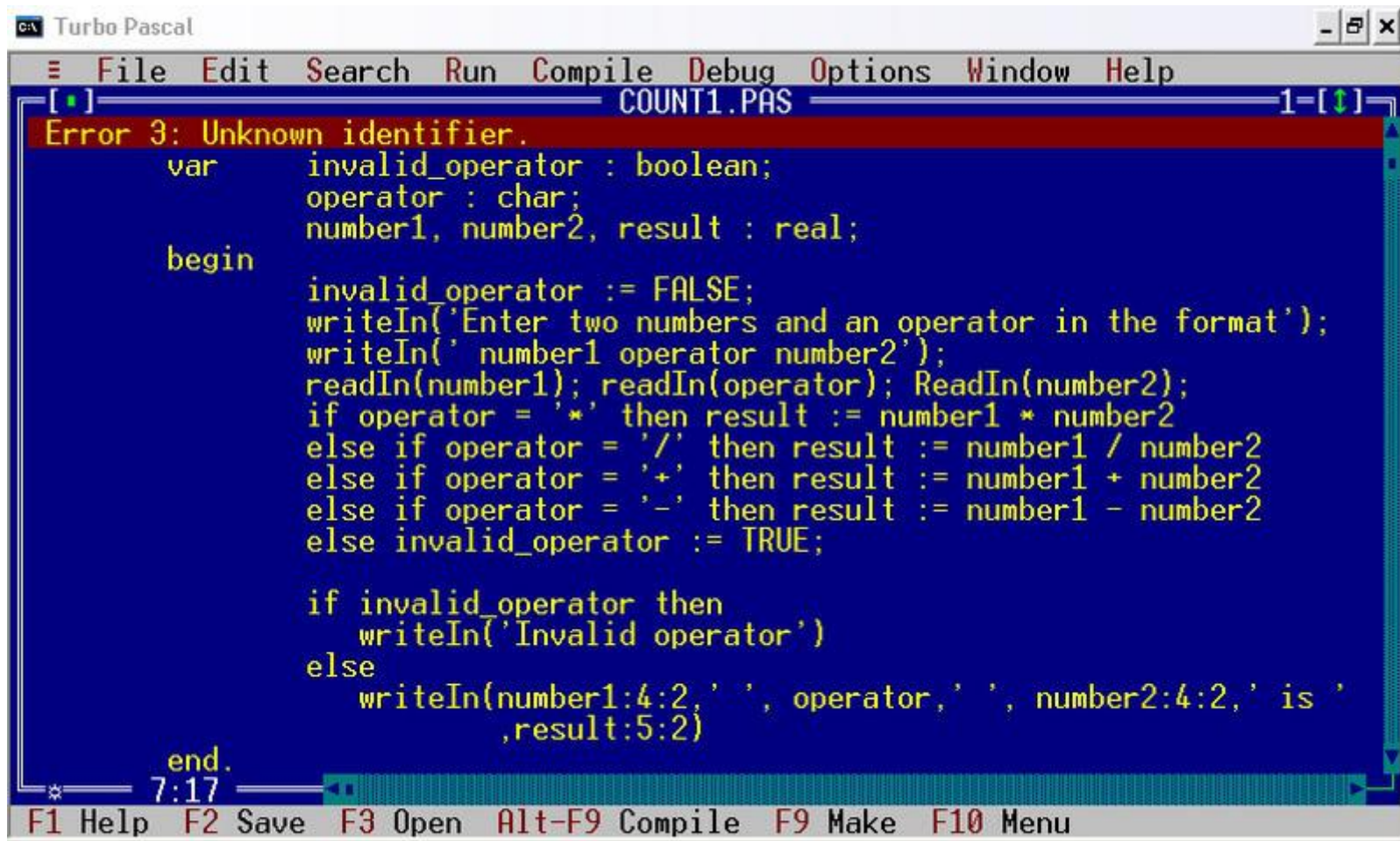
# Punched Card



# 1975 Terminal -- one processor, many users



# Pascal



```

Turbo Pascal
File Edit Search Run Compile Debug Options Window Help
COUNT1.PAS
Error 3: Unknown identifier.
var
  invalid_operator : boolean;
  operator : char;
  number1, number2, result : real;

begin
  invalid_operator := FALSE;
  writeIn('Enter two numbers and an operator in the format');
  writeIn(' number1 operator number2');
  readIn(number1); readIn(operator); ReadIn(number2);
  if operator = '*' then result := number1 * number2
  else if operator = '/' then result := number1 / number2
  else if operator = '+' then result := number1 + number2
  else if operator = '-' then result := number1 - number2
  else invalid_operator := TRUE;

  if invalid_operator then
    writeIn('Invalid operator')
  else
    writeIn(number1:4:2, ' ', operator, ' ', number2:4:2, ' is '
            , result:5:2)

end.
7:17
F1 Help F2 Save F3 Open Alt-F9 Compile F9 Make F10 Menu

```

# 1985 Desktop -- one user, one processor





# 1995 Laptop -- one user, many processors



# Java

```
import lejos.nxt.*;

public class Hello
{
    /**
     * The main method is where your program starts
     */
    public static void main(String[] args) throws Exception
    {
        // makes a buzzing sound
        Sound.buzz();
        // shows text on column 3, row 4 of the LCD
        LCD.drawString("I am alive !!", 3, 4);
        // pauses 2000 ms (= 2sec)
        Thread.sleep(2000);
        // makes another buzzing sound
        Sound.buzz();
        // end of program
    }
}
```

# 2005 -- Computer in Your Pocket



Smartphone

# Evolution of Computers

- 1965      Mainframe      one processor, one user
- 1975      Terminal      one processor, many users
- 1985      Desktop      one user, one processor
- 1995      Laptop      one user, many processors
- 2005      Smartphone      one user, many processors
- 2015      ??

# Evolution of Computers

	<b>1965 Mainframe</b>	<b>1985 Desktop</b>	<b>2015 Smartphone</b>
CPU Speed	KHz	MHz	GHz
Memory (bytes)	4K	640K	4G
Cost (\$)	1.000.000	10.000	100

# Variation of Processors -- Intel

v · d · e		Intel processors	[hide]
Discontinued	BCD oriented (4-bit)	4004 · 4040	
	pre-x86 (8-bit)	8008 · 8080 · 8085	
	x86-16 (16-bit)	8086 · 8088 · 80186 · 80188 · 80286	
	x87 (external FPUs)	8/16-bit databus: 8087 · 16-bit databus: 80287 · 32-bit databus: 80387 · 80487	
	x86-32/IA-32 (32-bit)	80386 (SX · 376 · EX) · 80486 (SX · DX2 · DX4 · SL · RapidCAD · OverDrive) · Pentium (Original · OverDrive · Pro · II · II OverDrive · III · 4 · M) · Core · Celeron M · Celeron D · A100/A110	
	x86-64/EM64T (64-bit)	Pentium 4 · Pentium D · Pentium Extreme Edition · Celeron D · Core 2	
	Other	iAPX 432 — RISC: i860 · i960 · StrongARM · XScale	
Current	x86-32: EP80579 · Intel CE · Atom — x86-64: Atom (some) · Celeron · Pentium (Dual-Core) · Core (i3 · i5 · i7) · Xeon — Other: IOP · Itanium		
Lists	CPU sockets · CPU power dissipation · Chipsets · PCHs · SCHs · ICHs · PIXs · Microarchitectures · Processors · Future Processors · Codenames · GMA · Atom · Celeron · Core (2 · i3 · i5 · i7) · Itanium · Pentium (Pro · II · III · 4 · D · M · Dual-Core) · Xeon		
	P5	P5 based cores	[show]
	P6	P6 / Pentium M / Enhanced Pentium M based cores	[show]
	NetBurst	NetBurst based cores	[show]

# Computer + Phone



+



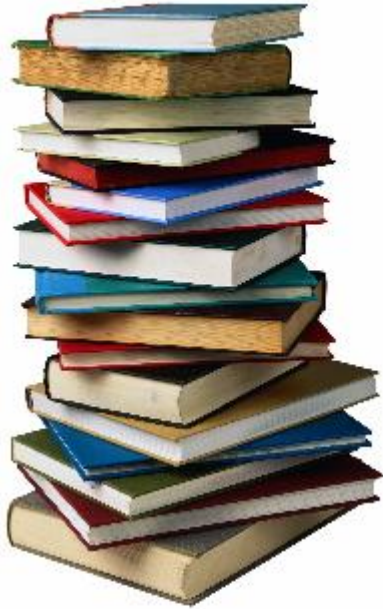
- Bilfon?
- Telesayar?

# Not Just a Computerized Phone!





# Replacement for Printed Matter

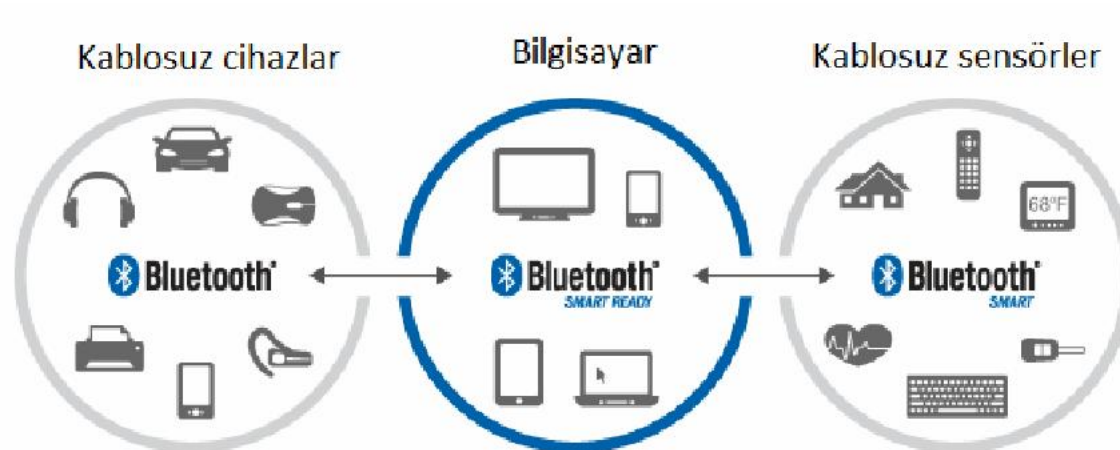


# Communication in Your Pocket

- **Bluetooth**                      Room                      send & receive
- **Wi-fi Wireless**                      Building                      send & receive
- **GSM Phone**                      Town                      send & receive
- **FM Radio**                      City                      just receive
- **GPS satellite**                      Earth                      just receive



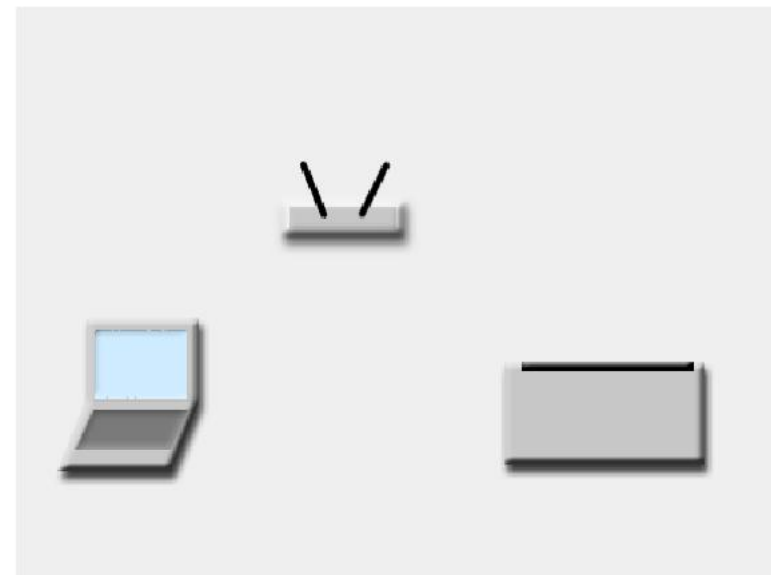
## Communication within a room



Bluetooth: the epithet of the tenth-century king Harald Bluetooth who united dissonant Danish tribes into a single kingdom

# wifi

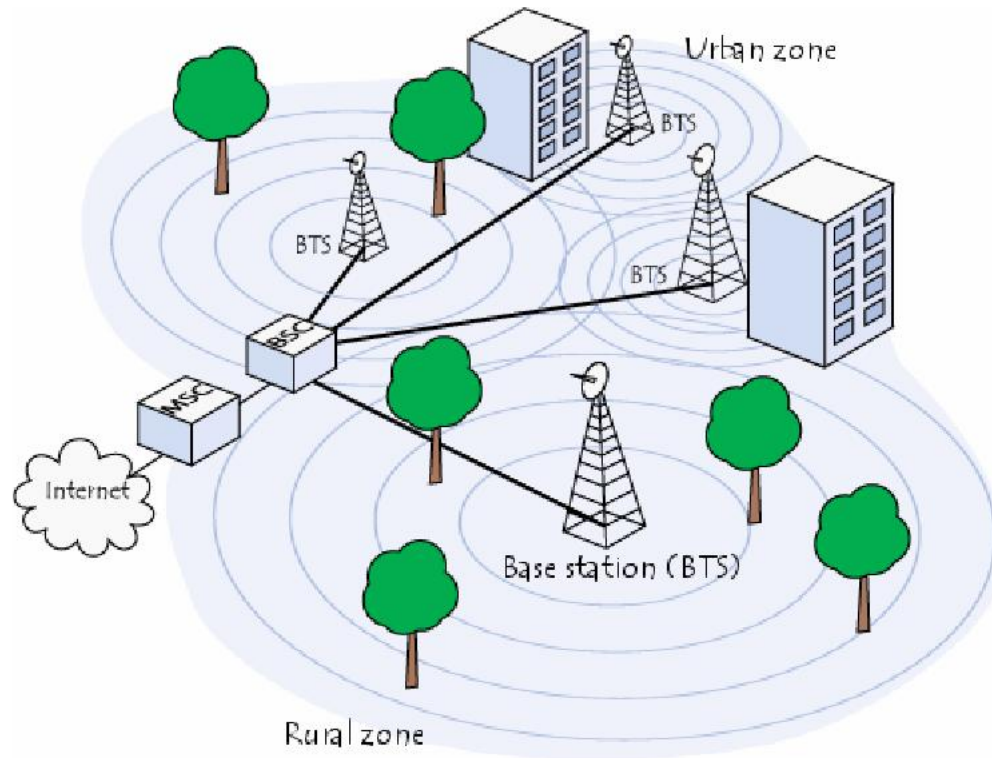
## Communication within a building





# Cellular Network

## Communication within a town





# FM Radio

Communication within a city

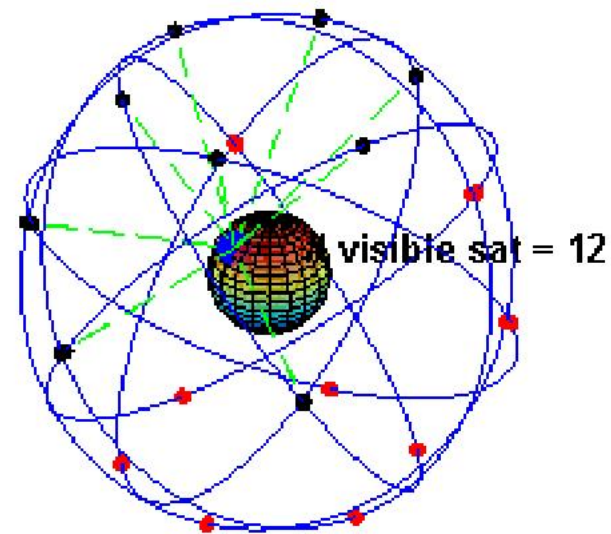




One-way communication with a satellite

Determination of latitude and longitude

24 satellites at a height of 20.000 km



# Communication in Your Pocket

- **Bluetooth**            1 m            headset; remote-control
- **Wi-fi Wireless**        10 m            modem; computer
- **GSM Phone**            1 km            base station
- **FM Radio**            10 km            radio channels
- **GPS satellite**        20.000 km        location services



# Mesnevî'den Hikmetler

**Pes suhan kûtâh bâyed vesselâm**

*O halde sözü kısa kesmek gerektir vesselâm*