

# Въведение в паралелните изчисления

*Курс „Паралелни изчисления“*



ИНСТИТУТ ЗА СЪВРЕМЕННИ  
ФИЗИЧЕСКИ ИЗСЛЕДВАНИЯ

Стоян Мишев

Кратка история на компютинга.

Основни C++ конструкции за паралелни изчисления.

- study of automatic computing (1940s)
- study of information processing (1950s)
- study of phenomena surrounding computers (1960s)
- study of what can be automated (1970s)
- study of computation (1980s)
- study of information processes both natural and artificial (2000s)

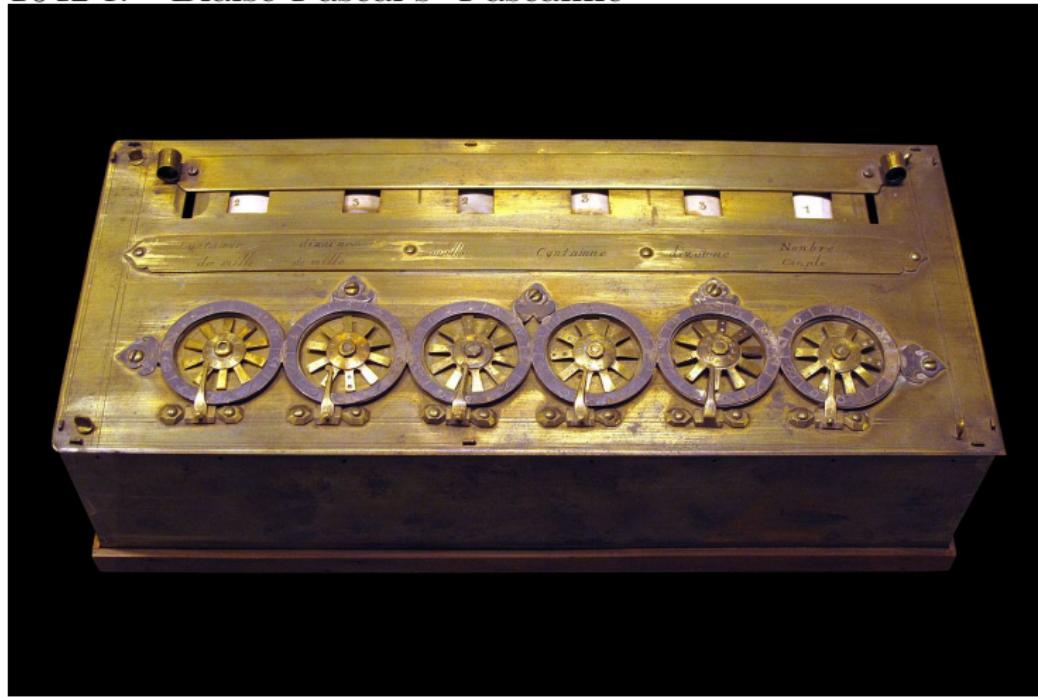
по Peter J. Denning, *What is Computation?*, Opening Statement, Ubiquity Symposium, November 2010

1623 г. - Wilhelm Schickard (Tuebingen)

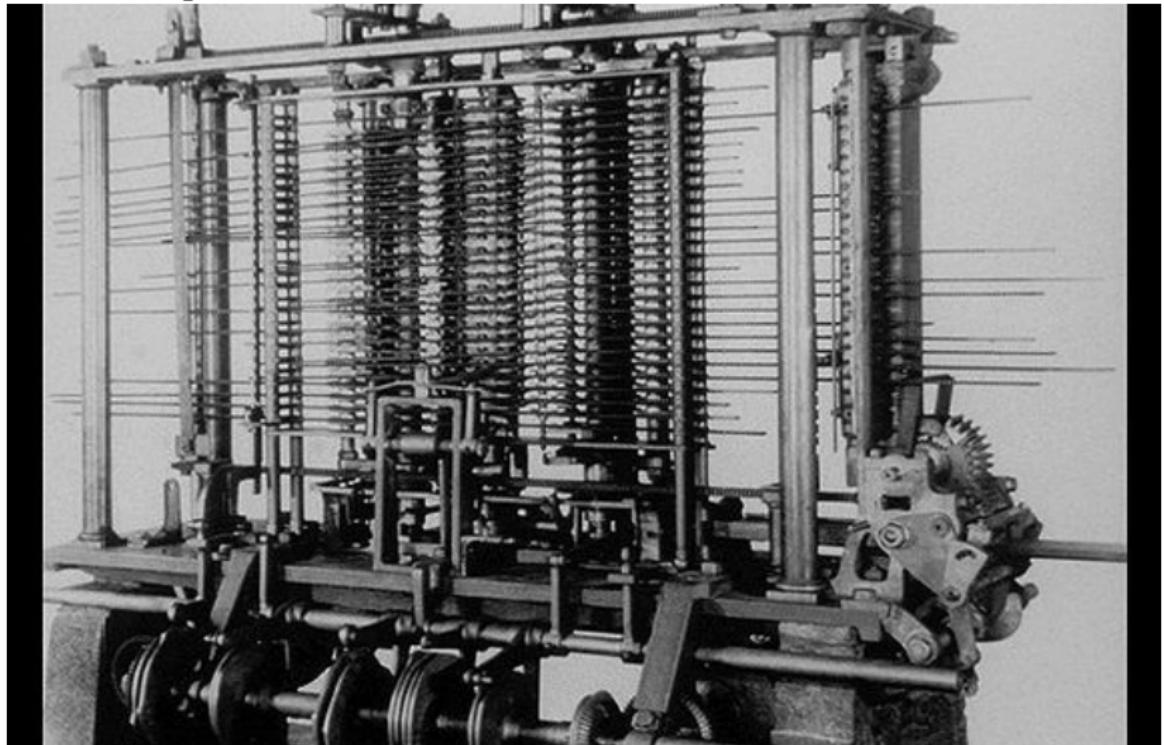


<https://www.youtube.com/watch?v=5undFLMNohA&t=2s>

1642 г. - Blaise Pascal's "Pascaline"



- 1834 Чарлз Бабидж



- 1834 Чарлз Бабидж

*“През 1834 година конструкторът замислил създаването на механично устройство, способно не просто да сумира, но и да управлява хода на собствената си работа, в зависимости от заложена програма и резултатите от междинните изчисления! Последователността на изчисленията в машината на Бабидж се определяла от перфокарти с програма.”*

- Konrad Zuse, Германия
  - Alan Turing, Англия
  - Harold Keen, САЩ
  - Дж. Атанасов, САЩ
  - George Stibitz, САЩ
- по <https://www.youtube.com/watch?v=qundvme1Tik>

постига дизайн на компютър, които получава последователност от дупки върху перфокарти

Машина за нелинейни диференциални уравнения

Машина за алгебрични уравнения

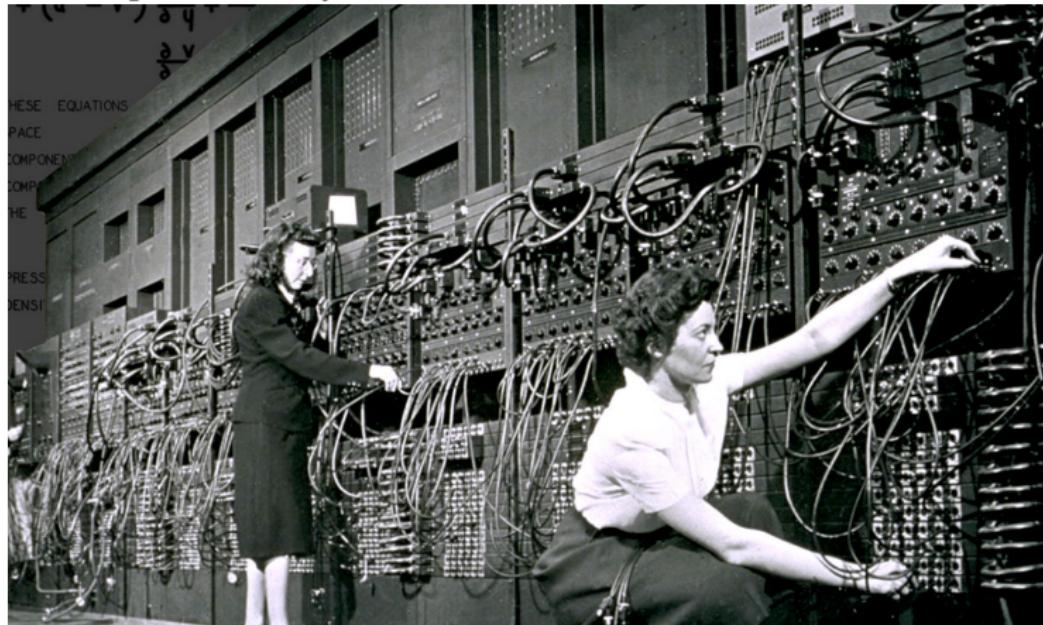
Експериментира с набор от релета за съставяне на подходящи електр. вериги за реализиране на двоична логика



<https://www.edn.com/>

stibitz-demonstrates-remote-computing-september-11-1940/

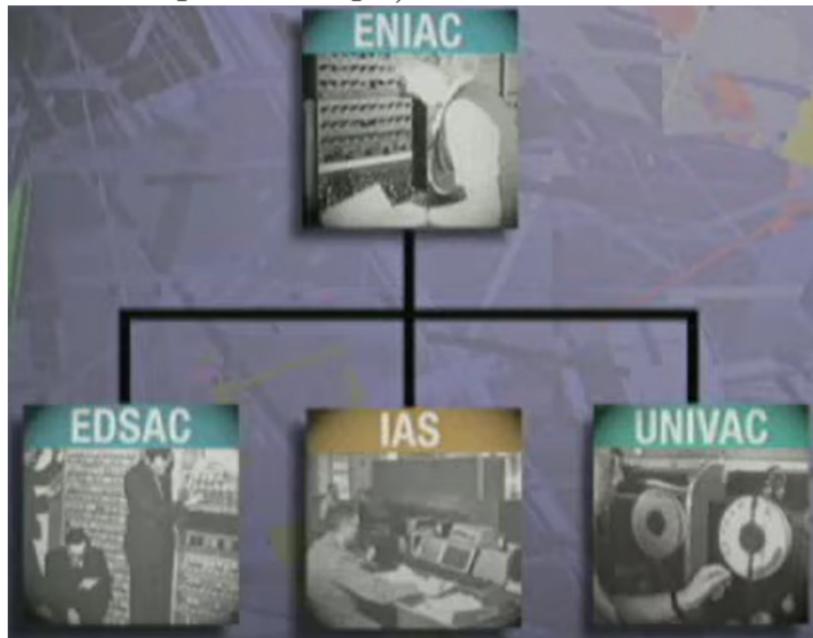
но <https://www.youtube.com/watch?v=wsirYCAocZk>

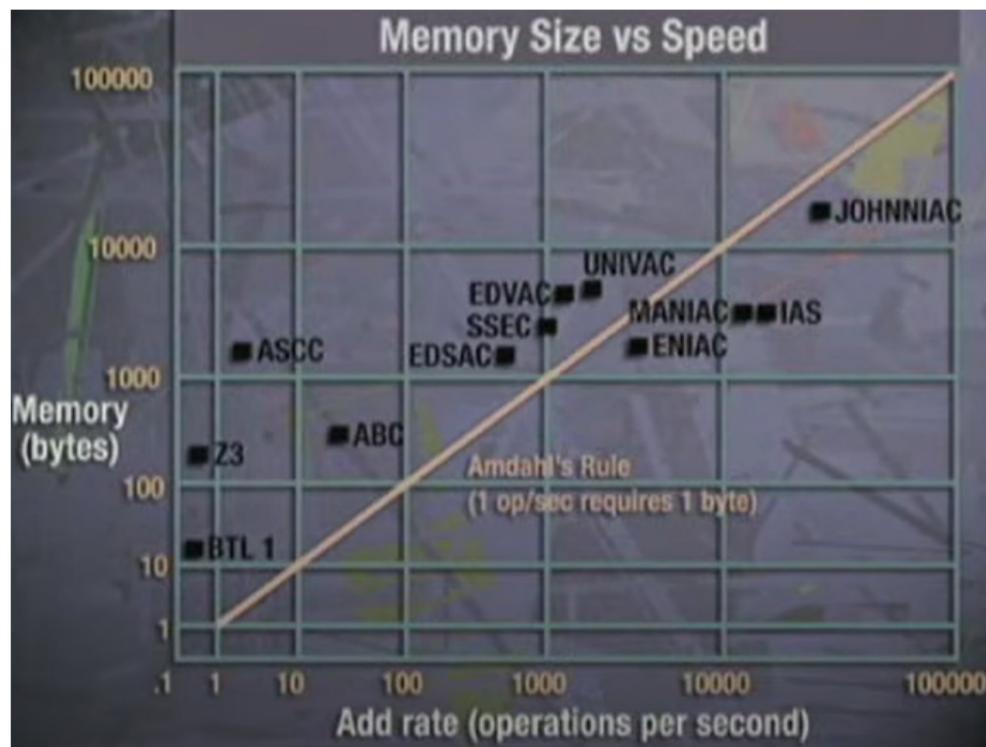


ENIAC (Electronic Numerical Integrator and Computer)

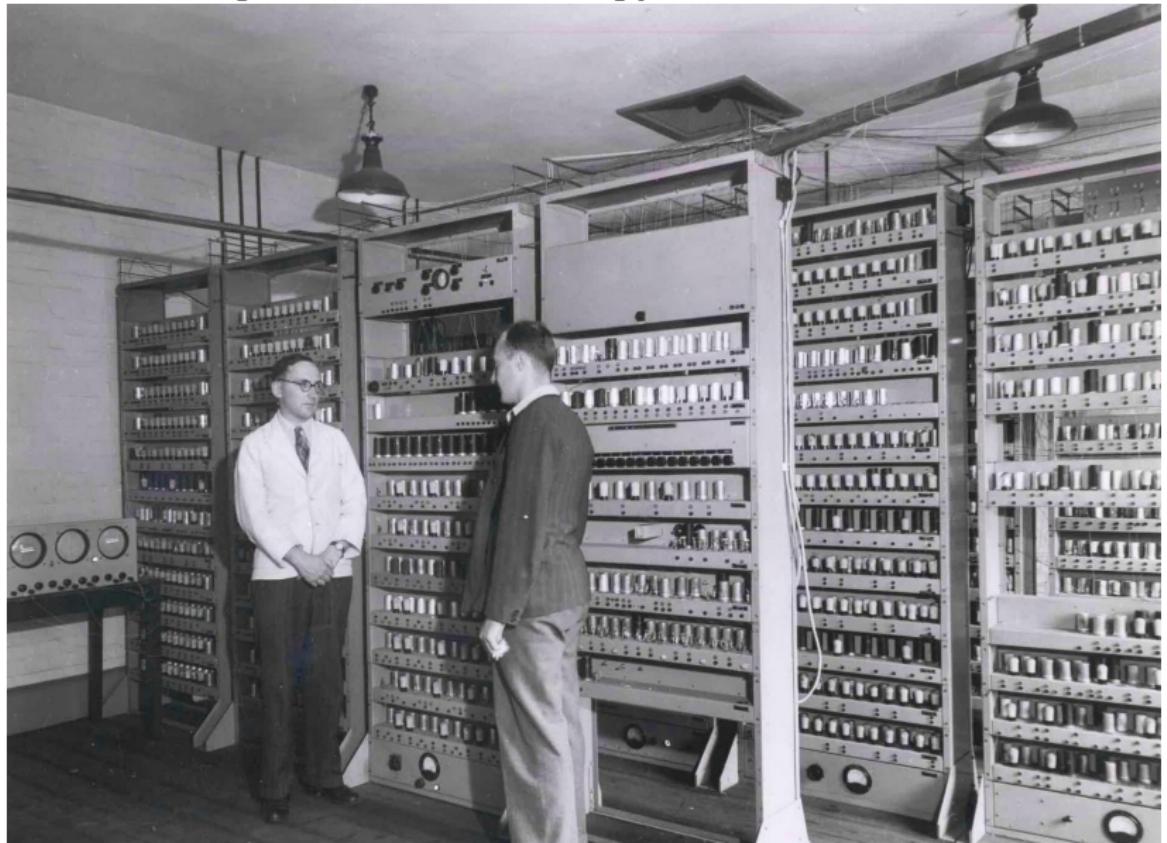
Presper Eckert and John Mauchly

EDSAC (Cambridge), IAS (USA), UNIVAC-1 (USA, първият компютър на пазара)





EDVAC - бързо подаване на инструкции и памет



<https://web.mit.edu/STS.035/www/PDFs/edvac.pdf>

First Draft of a Report  
on the EDVAC

by

John von Neumann

Contract No. W-670-ORD-4926

Between the

United States Army Ordnance Department

and the

University of Pennsylvania

Moore School of Electrical Engineering  
University of Pennsylvania

June 30, 1945

<https://top500.org/lists/top500/2024/06/>

1	Frontier - HPE Cray EX235a, AMD Optimized 3rd Generation EPYC 64C 2GHz, AMD Instinct MI250X, Slingshot-11, HPE DOE/SC/Oak Ridge National Laboratory United States	8,699,904	1,206.00	1,714.81	22,786
2	Aurora - HPE Cray EX - Intel Exascale Compute Blade, Xeon CPU Max #970 52C 2.4GHz, Intel Data Center GPU Max, Slingshot-11, Intel DOE/SC/Argonne National Laboratory United States	9,264,128	1,012.00	1,980.01	38,698
3	Eagle - Microsoft NvD5, Xeon Platinum 8480C 48C 2GHz, NVIDIA H100, NVIDIA Infiniband NDR, Microsoft Azure Microsoft Azure United States	2,073,600	561.20	846.84	
4	Supercomputer Fugaku - Supercomputer Fugaku, A64FX 48C 2.2GHz, Tofu interconnect D, Fujitsu RIKEN Center for Computational Science Japan	7,630,848	442.01	537.21	29,899
5	LUMI - HPE Cray EX235a, AMD Optimized 3rd Generation EPYC 64C 2GHz, AMD Instinct MI250X, Slingshot-11, HPE EuroHPC/CSC Finland	2,752,704	379.70	531.51	7,107
6	Alps - HPE Cray EX254n, NVIDIA Grace 72C 3.1GHz, NVIDIA GH200 Superchip, Slingshot-11, HPE Swiss National Supercomputing Centre (CSCS) Switzerland	1,305,600	270.00	353.75	5,194
7	Leonardo - BullSequana XH2000, Xeon Platinum 8358 32C 2.6GHz, NVIDIA A100 SXM4 64 GB, Quad-rail NVIDIA HDR100 Infiniband, EVIDEN EuroHPC/CINECA Italy	1,824,768	241.20	306.31	7,494

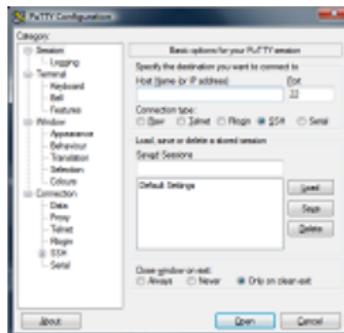
Домашна работа:

[https://github.com/EricDarve/cme213-spring-2021/tree/  
main/Lecture%20Slides/cpp%20tutorial](https://github.com/EricDarve/cme213-spring-2021/tree/main/Lecture%20Slides/cpp%20tutorial)

## C++ Refresher Tutorial

```
ssh -X -p 65000 имя@neutronstar.iaps.institute
```

ИЛИ



<https://www.putty.org/>