

The Nucleus of a Multiprogramming System

Per Brinch Hansen

1970

today's topics

problem

goal

contributions

short introduction

details

discussion

contributions

- implementation (maybe the first) of an idea
- fundamentals for further research (1970!)

pictures

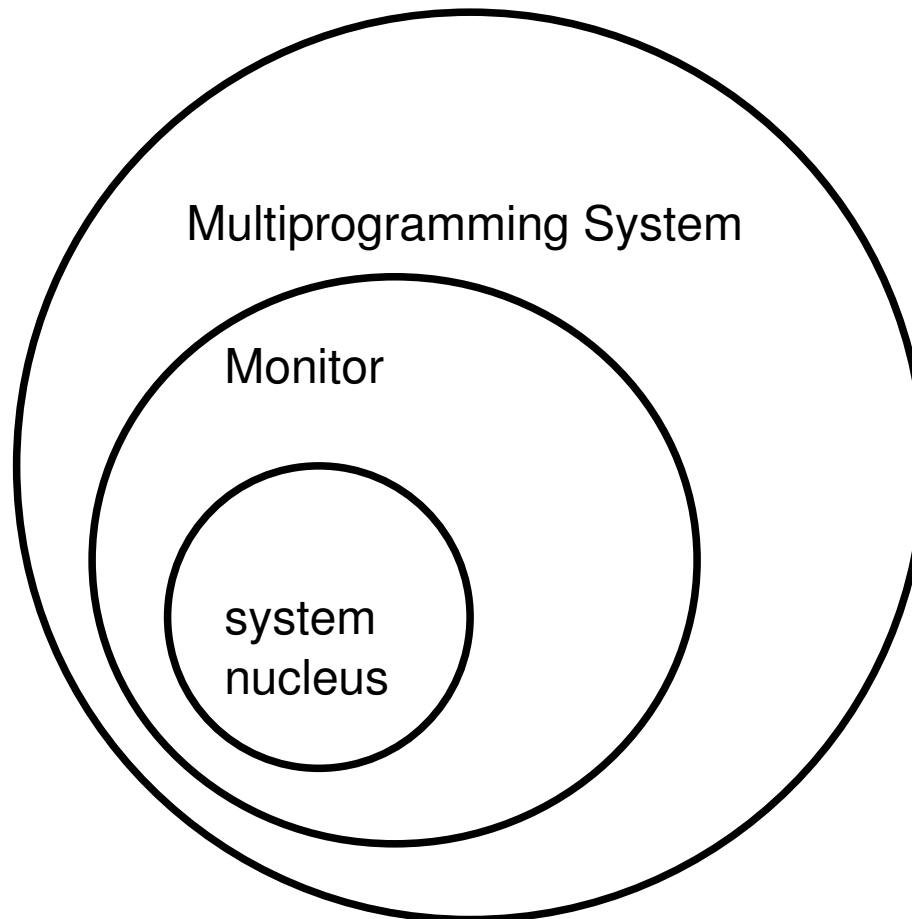


Per
Brinch Hansen

RC 4000



x is part (however in detail) of y



defined terms (1970!)

program

document

process

- internal

- external

peripheral device

multiprogramming system

independent, parallel, cooperating processes

relationships among:

resources (store + peripherals)

data (programs + documents)

processes (internal + external)

new features

- extensibility
- operation modes
- communication interface

process control + resource allocation

Figure 1

no limit for number of tree-levels
limited number of processes

process communication

send message

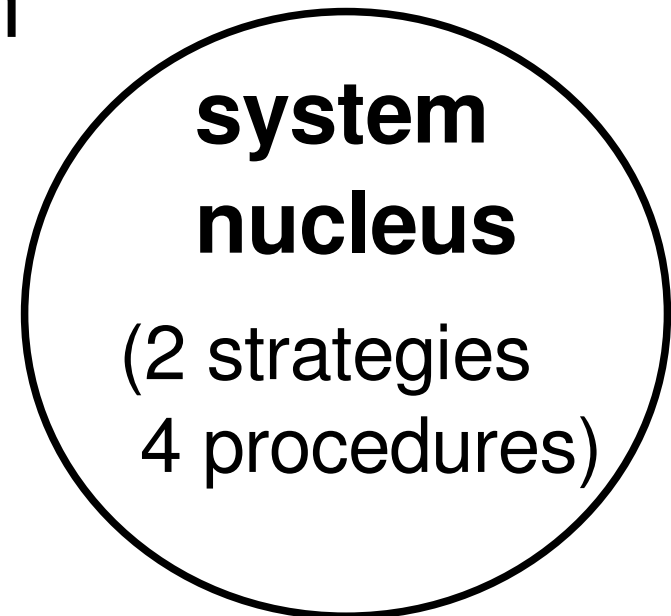
wait message

send answer

wait answer

inside / outside

- operator communication
- program scheduling
- ressource allocation
- strategies
- program loading
- swapping



end of talk / start of discussion

- influence on operating systems research ?
 - yes, but how?
- basic paper for so called micro-kernels ?
 - comparable with current approaches?