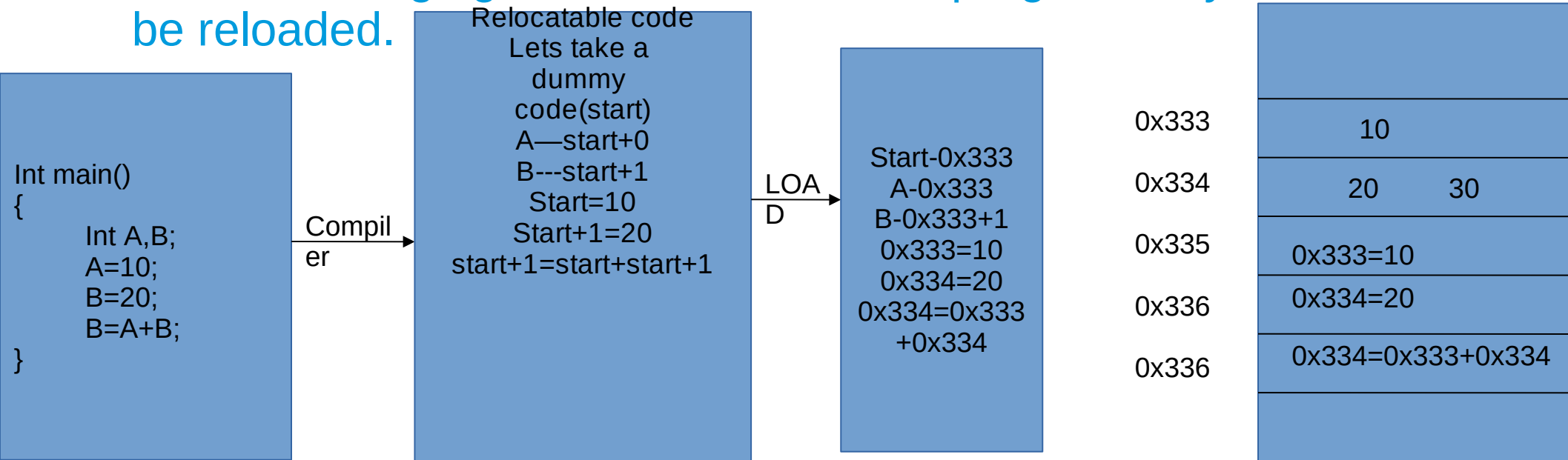


Binding at load time

Here the compiler produces only relocatable code

Binding to absolute address is done during load time .

In case of changing in fence address the program only needs to be reloaded.



Any Disadvantages

The fence address can not change when program is executing.

Binding at execution time

dynamic binding

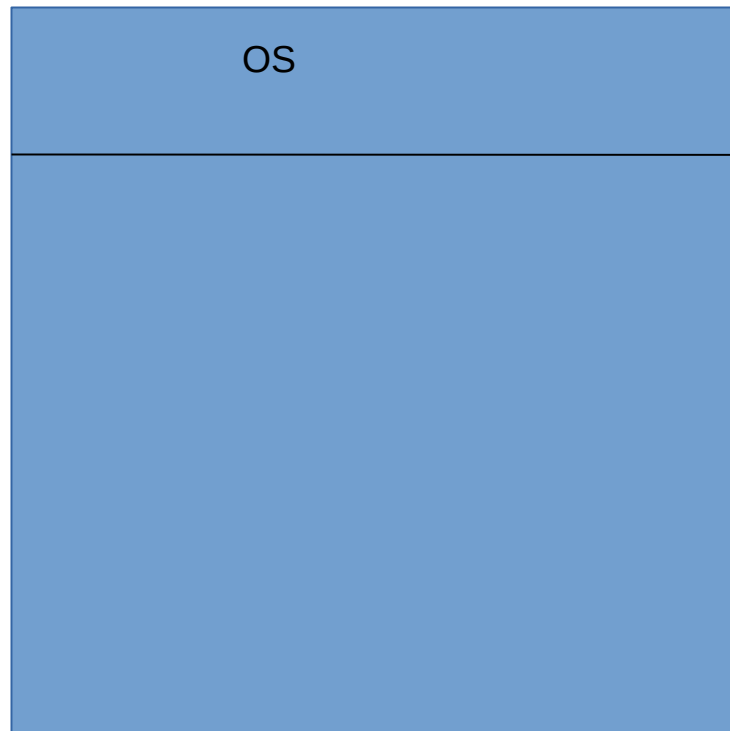
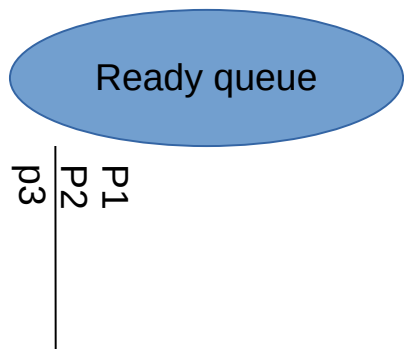
The fence register is now called base register and every address generated by a user process at the time it is sent to memory.

The user never sees the real physical addresses.

The user program deals with logical addresses. The memory management unit converts logical addresses into physical addresses.

The user generates only logical addresses.

Allocation of memory partition



Fixed partition (MFT)

Also known as multiprogramming with a fixed number of tasks.

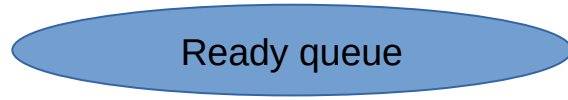
Divide the memory into a number of fixed size partitions.

Each partition may contain exactly one process.

Therefore the degree of multiprogramming is bound by the number of partitions.

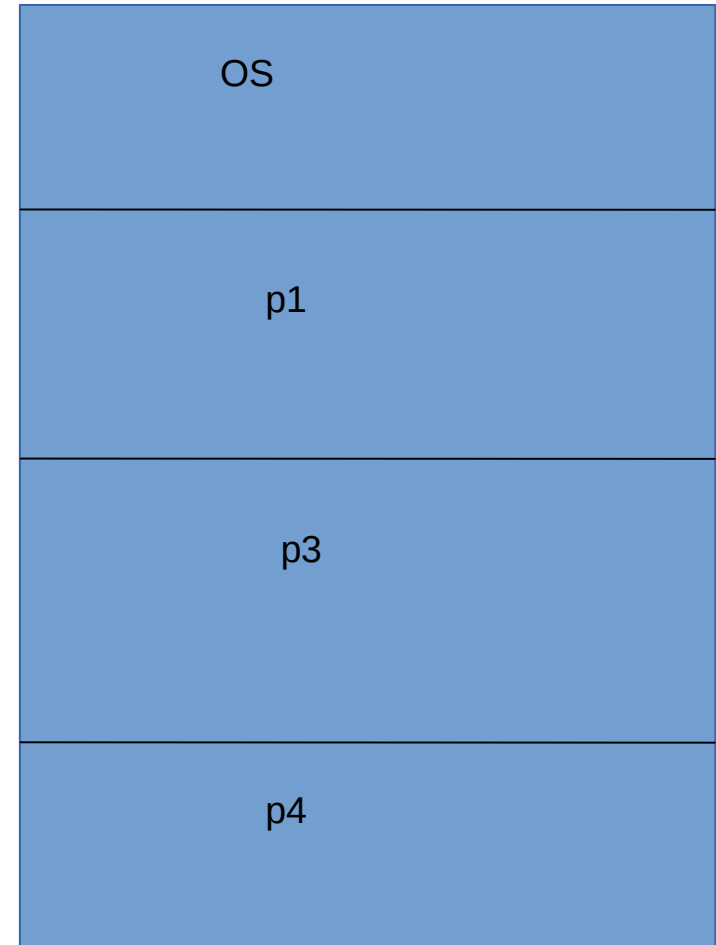
When a partition is free a process is selected from the ready queue and is loaded into the free partition.

When a process terminates the partition becomes available for another process.



P2
P5
p6

Degree of multiprogramming is 3



Fixed partition (MFT)

Also known as multiprogramming with a fixed number of tasks.

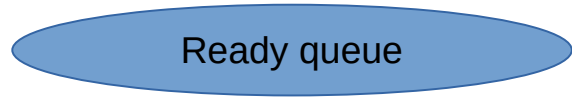
Divide the memory into a number of fixed size partitions.

Each partition may contain exactly one process.

Therefore the degree of multiprogramming is bound by the number of partitions.

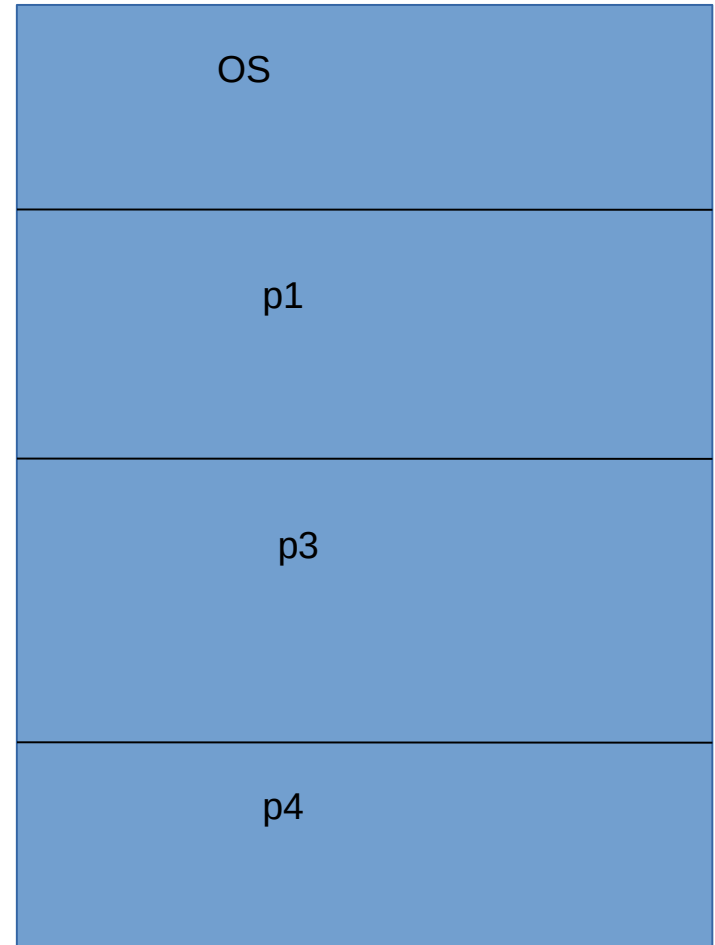
When a partition is free a process is selected from the ready queue and is loaded into the free partition.

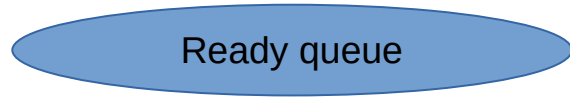
When a process terminates the partition becomes available for another process.



P2
P5
p6

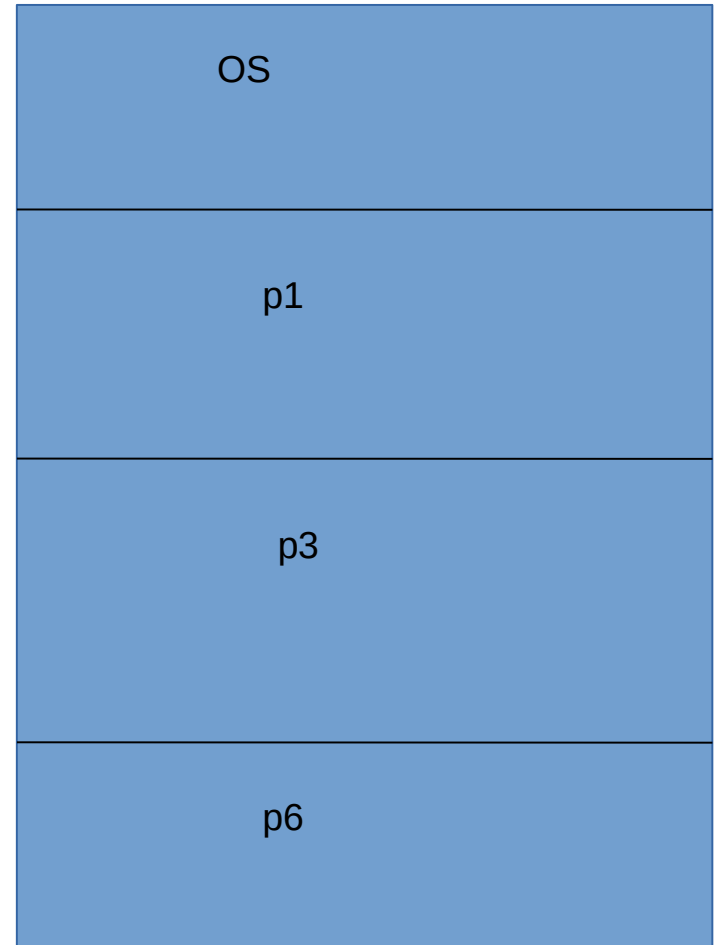
Degree of multiprogramming is 3





P2
P5

Degree of multiprogramming is 3



32 kB memory can be divided into regions of the following sizes:

Os----10KB

Very large programs----12 KB

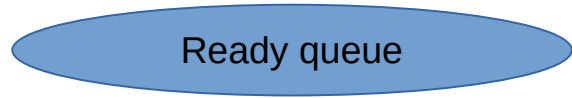
Average programs-----6 KB

Small programs-----4 KB

One variation is have multiple queues, a queue for each region.

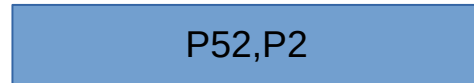
The user specifies the maximum amount of memory required or the OS can attempt to determine the memory requirements automatically.

Accordingly a process could be assigned to queue.

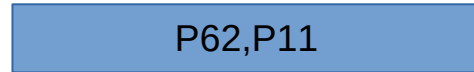


P2 2KB
P5 10KB
P8 8KB
P11 5KB
P52 3KB
P62 6KB

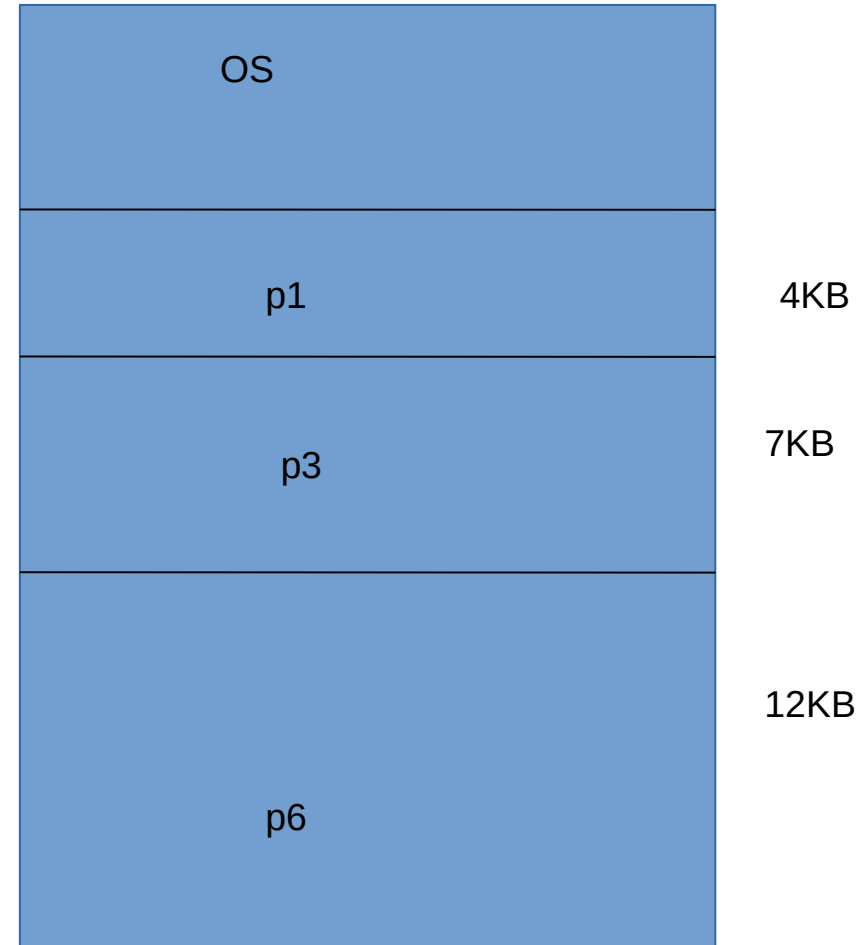
2KB queue

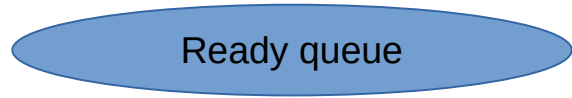


7KB queue



12 KB queue





P2 8KB
P5 10KB
P8 8KB
P11 10KB
P52 8KB
P62 9KB

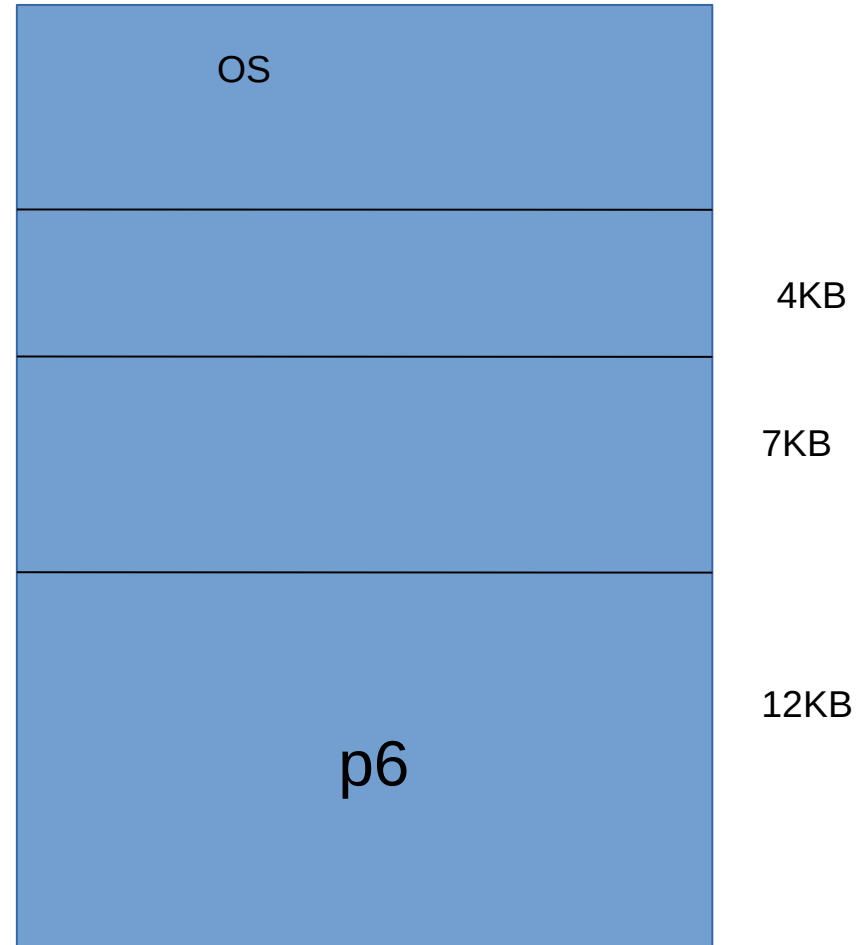
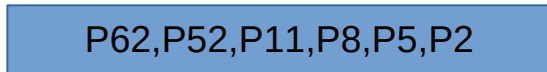
2KB queue



7KB queue



12 KB queue



Disadvantage

Internal and external fragmentation may occur.

Dynamic Allocation

Variable partition Allocation (MVT)

The OS keeps a table indicating which part of memory are available (called holes) are available and which are occupied.

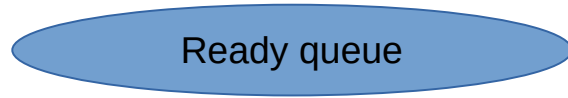
Initially all memory is available for user processes.

When a process arrives we select a hole which is large enough to hold this process.

We allocate as much memory is required for the process and the rest is kept as a hole which can be used for later requests.

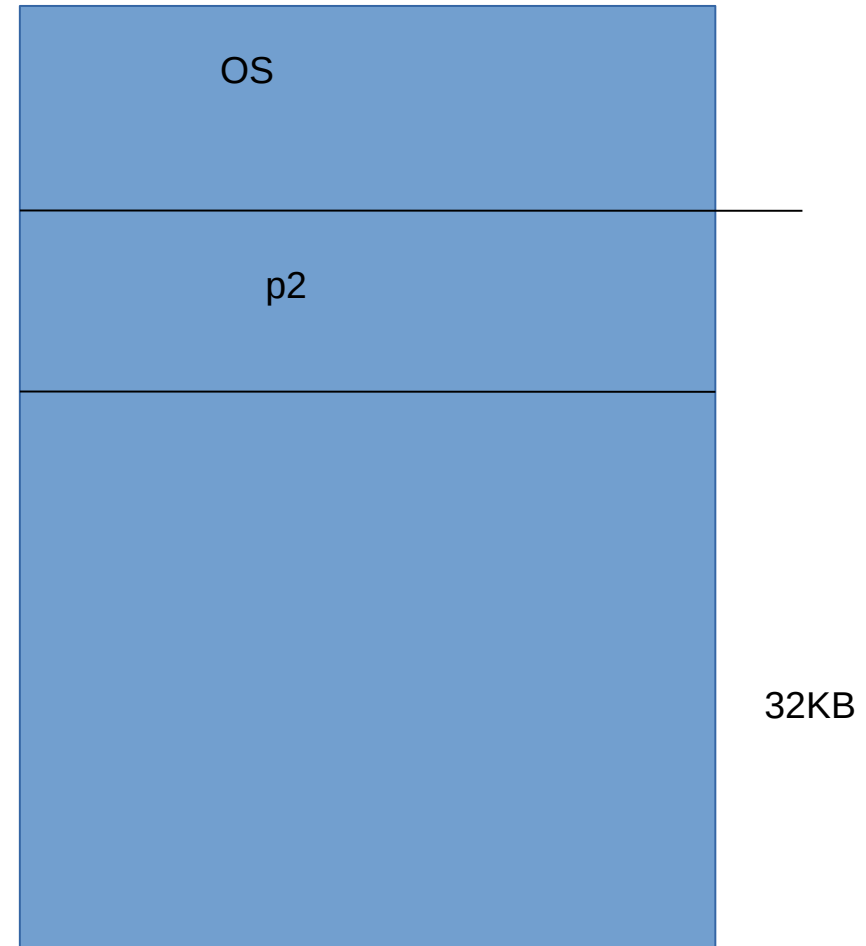
If a hole large enough for this process cannot be found, this process waits until some other process(es) finishes and a large enough hole is available.

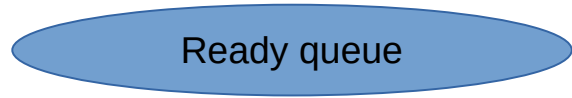
If a new hole is adjacent to other holes OS merge the adjacent holes to form a large hole.



P2 8KB
P5 10KB
P8 8KB
P11 10KB
P52 8KB
P62 9KB

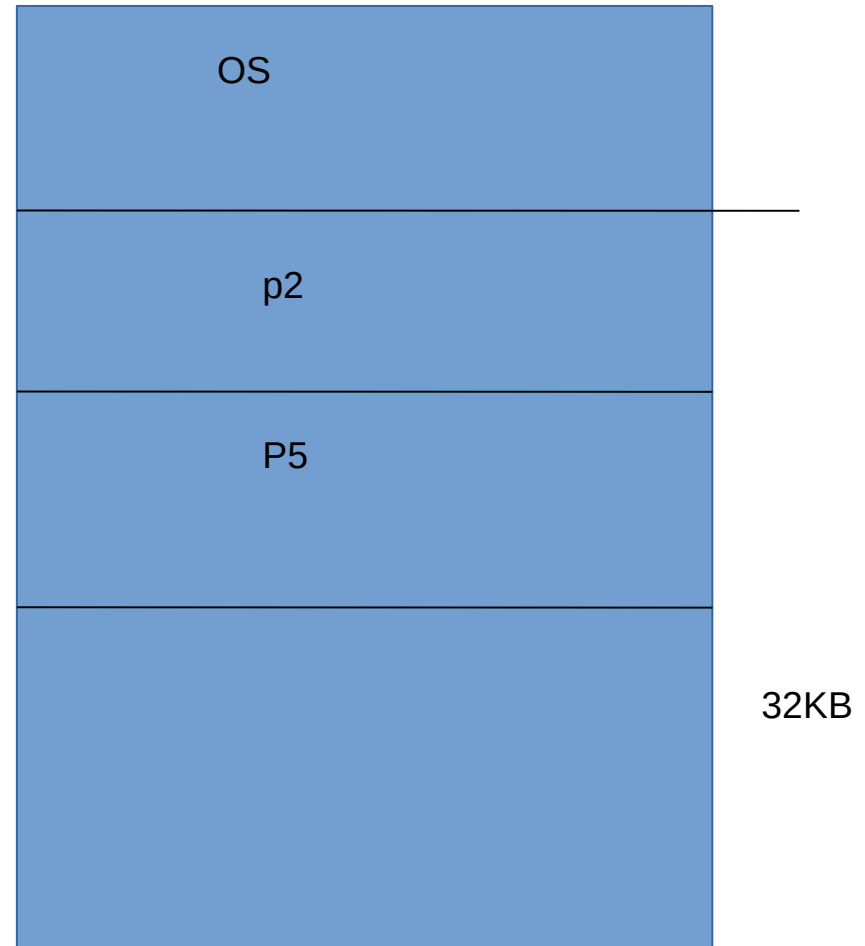
Free---24KB

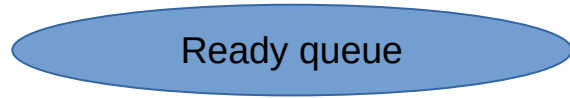




P5 10KB
P8 8KB
P11 10KB
P52 8KB
P62 9KB

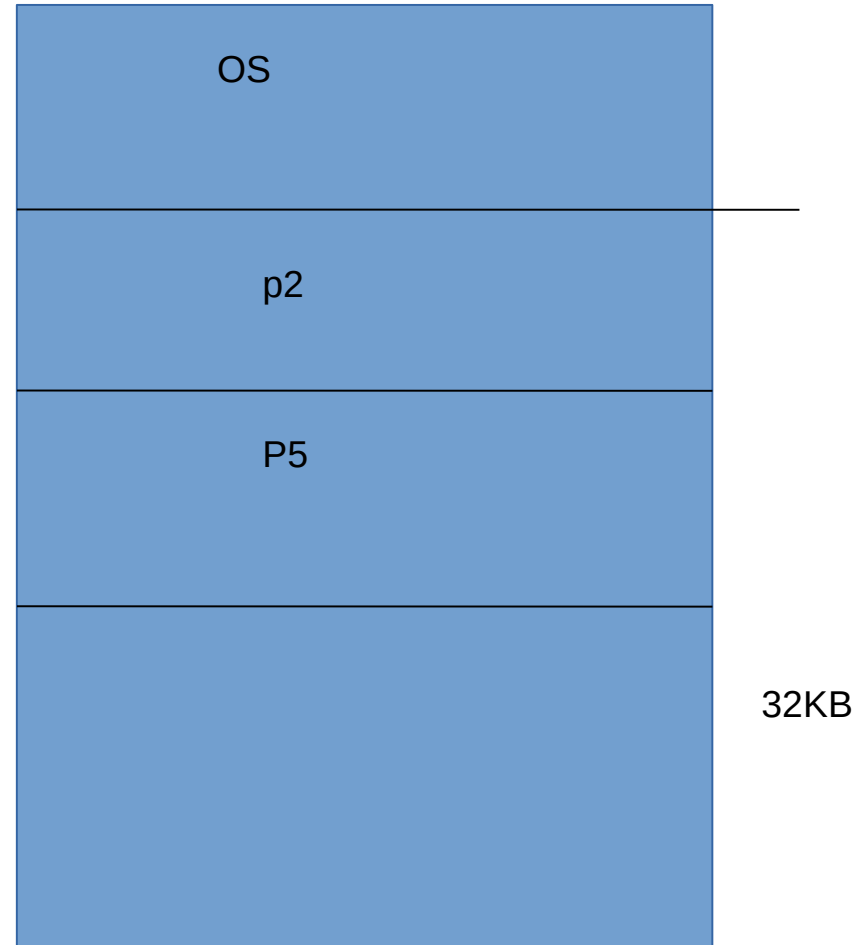
Free---24KB

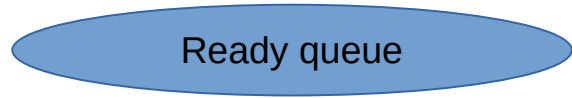




P8 8KB
P11 10KB
P52 8KB
P62 9KB

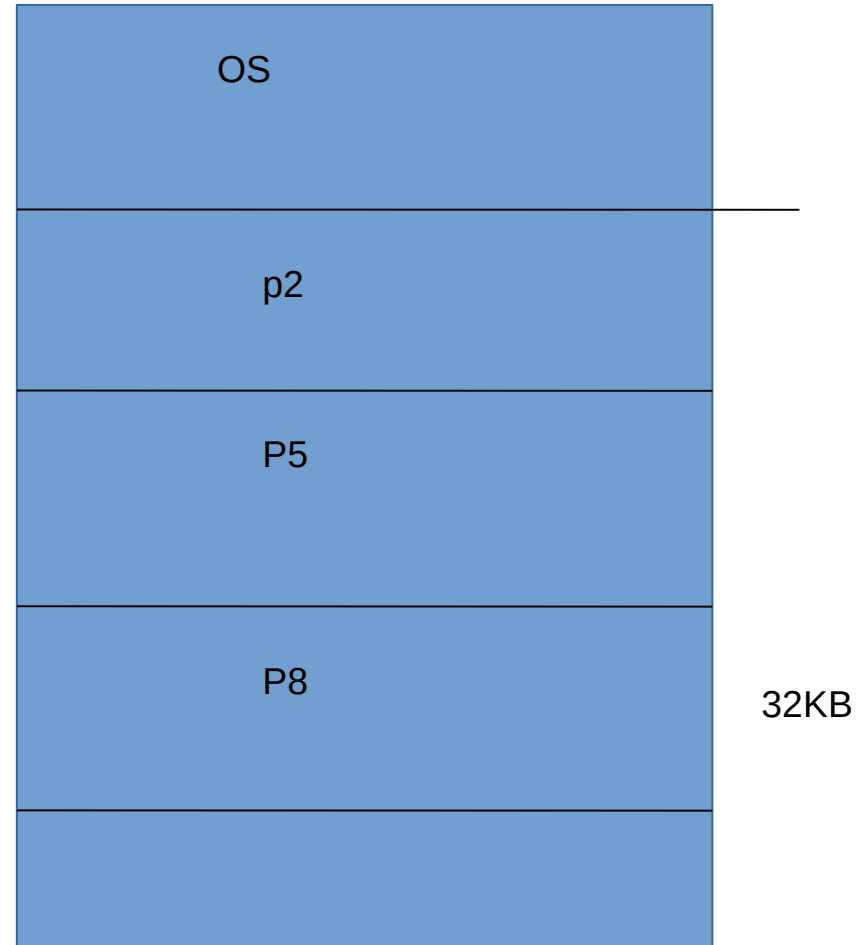
Free---14KB

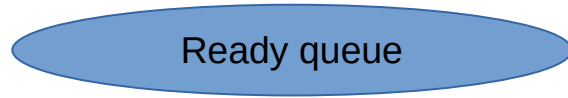




P8 8KB
P11 10KB
P52 8KB
P62 9KB

Free---14KB

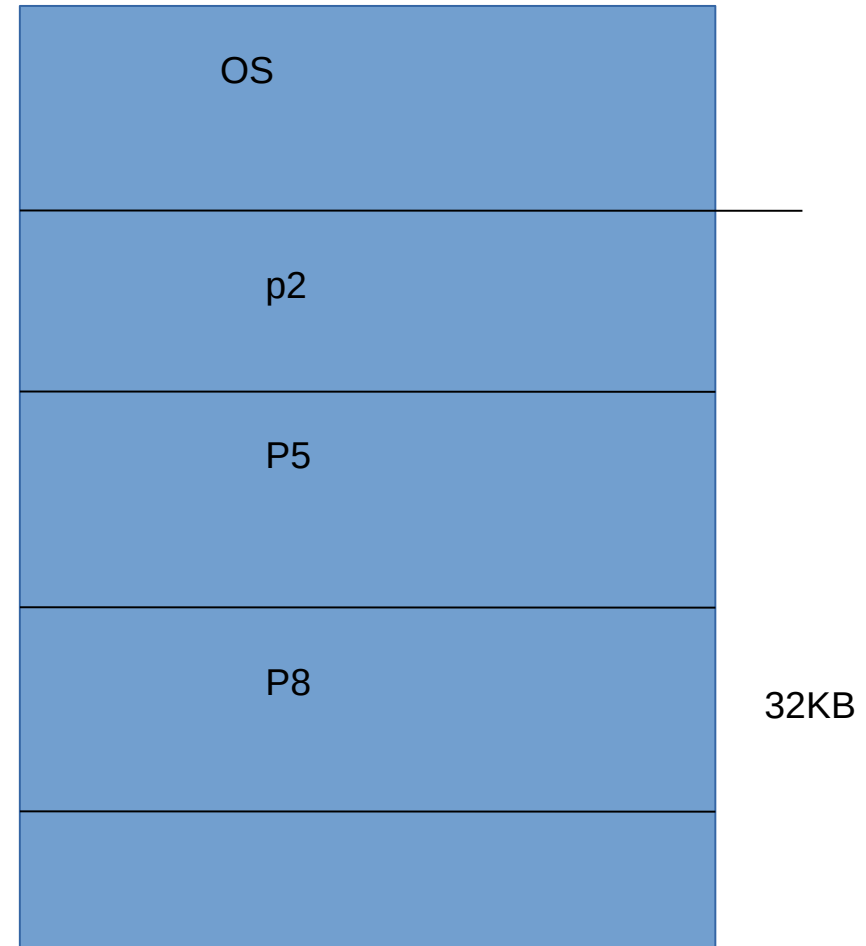


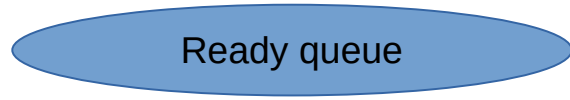


P11 10KB
P52 8KB
P62 9KB

Free---6KB

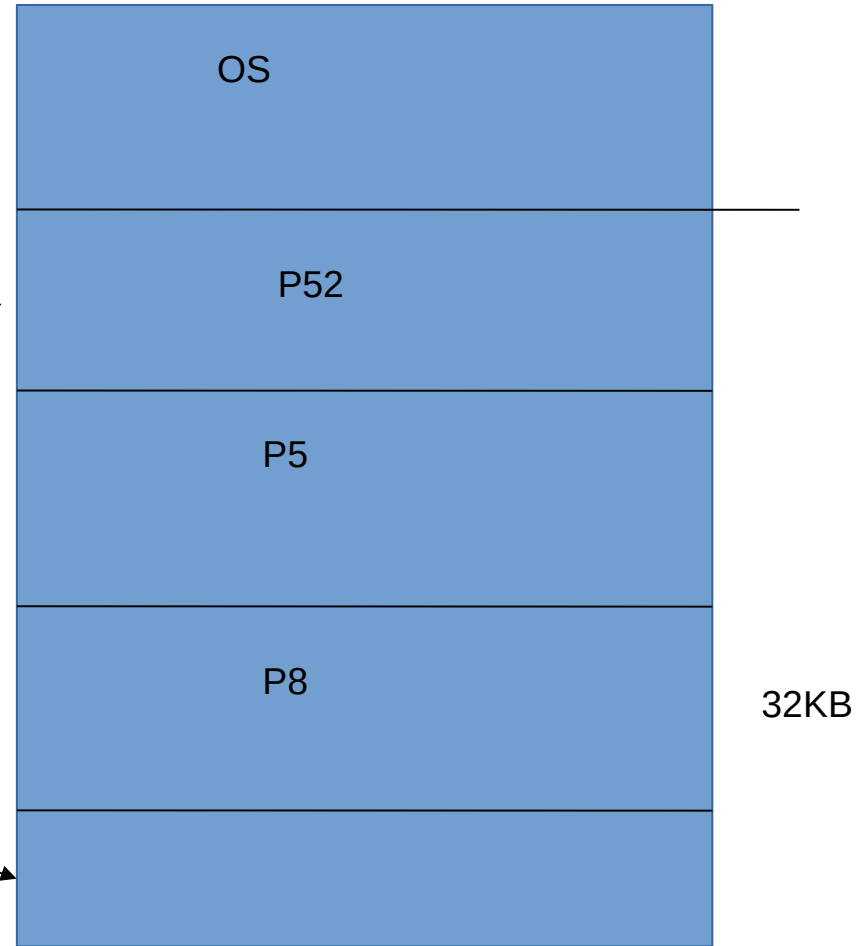
P2 finishes execution

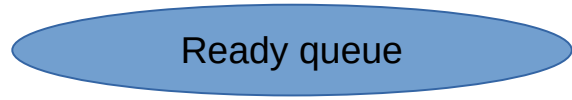




P11 10KB
P52 8KB
P62 9KB

Free---6KB
8 KB

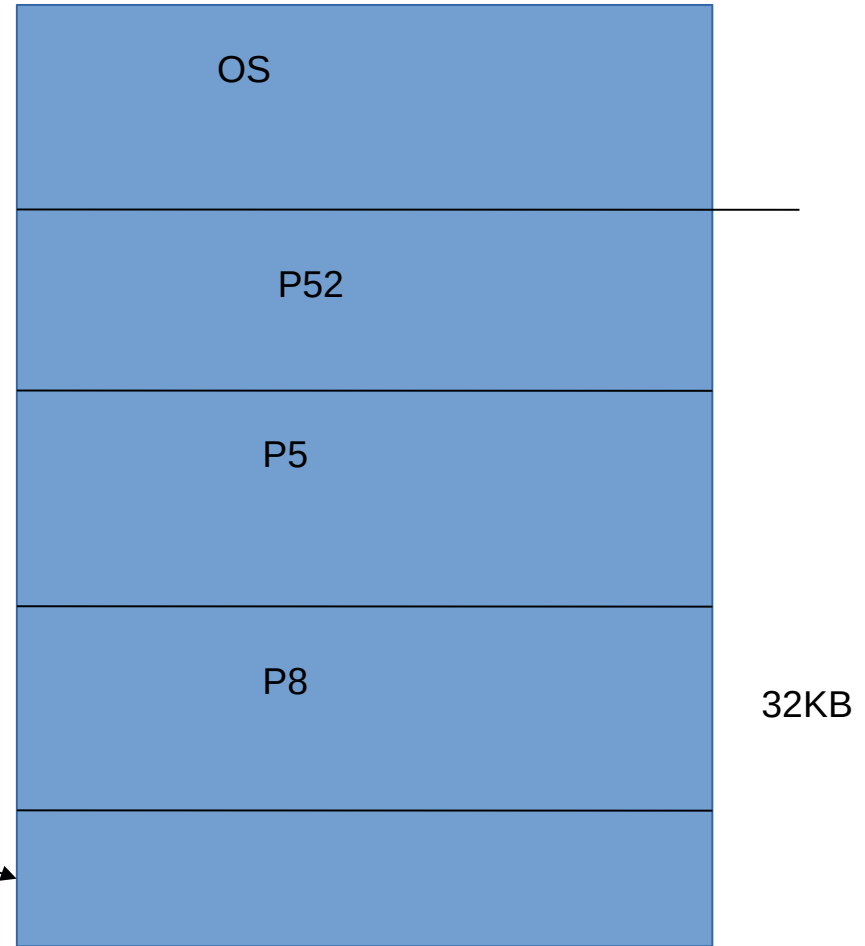
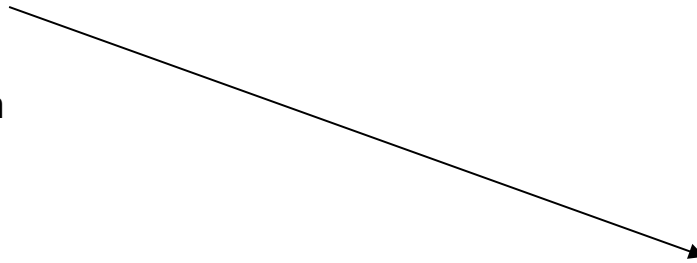


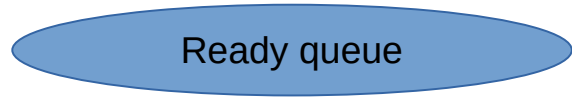


P11 10KB
P62 9KB

Free---6KB

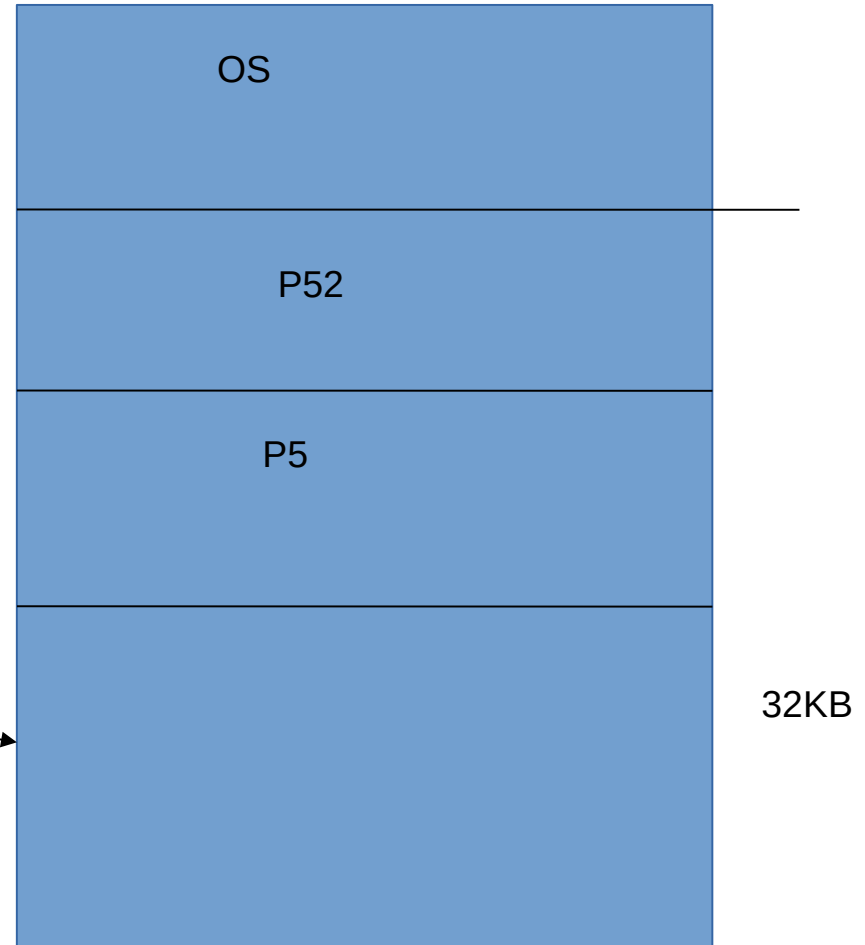
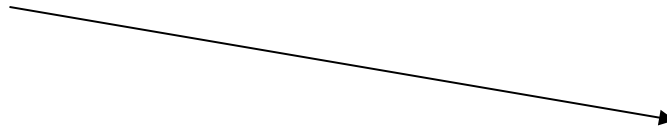
P8 finishes execution

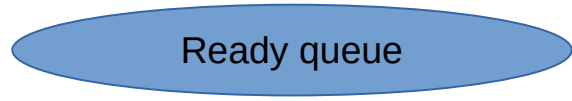




P11 10KB
P62 9KB

Free---14KB

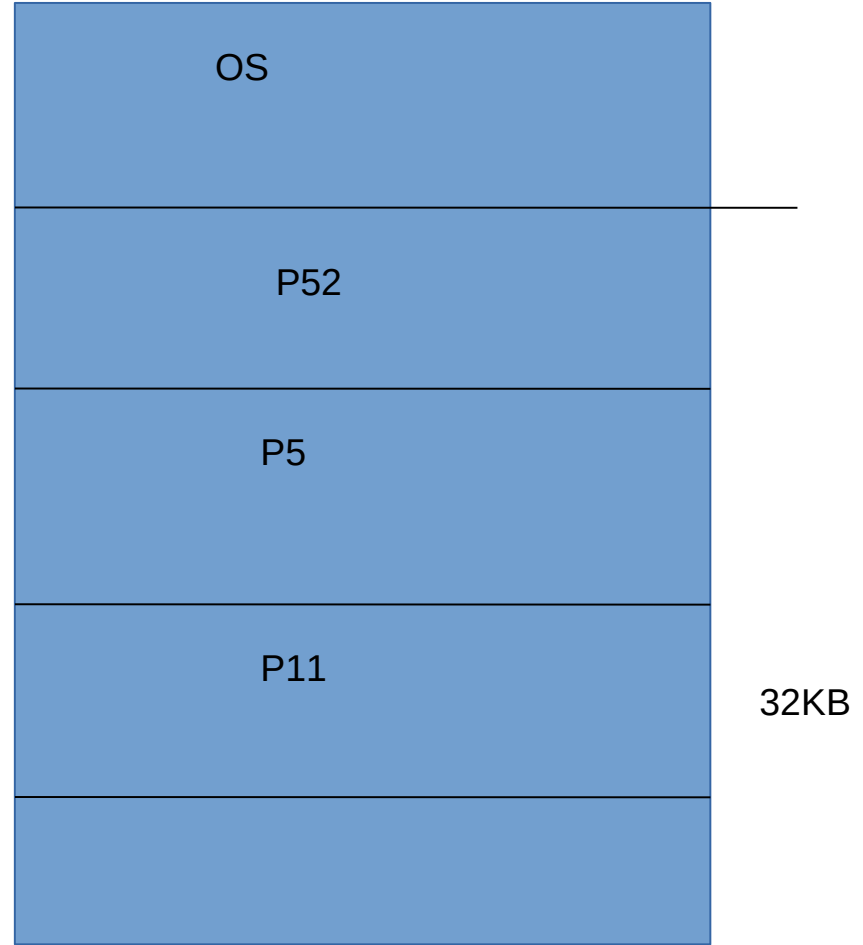
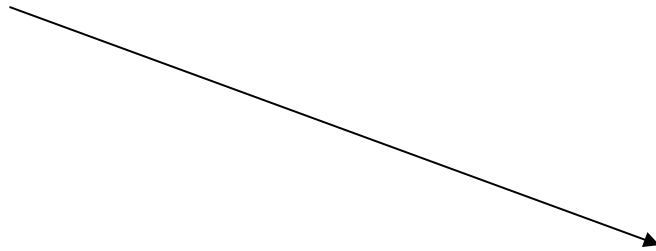




Ready queue

P62 9KB

Free---4KB



OS

P52

P5

P11

32KB