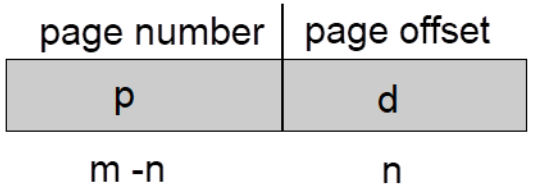
MAIN MEMORY

PAGING - IMPORTANT FORMULAS

POWER OF 2



FOR MAIN MEMORY

Physical Address Space = Size of main memory (2^M)

Size of main memory = Total number of frames **x** Frame size

Frame size = Page size ($2^F = 2^P$)

Total number of frames = Size of main memory / Frame size

If number of frames in main memory = $2^M / 2^F = 2^{M-F} = 2^X$, then number of bits in frame number = X bits

If Page size = 2^P, then number of bits in page = P bits

If size of main memory = 2^M, then number of bits in physical address = M bits

FOR PROCESS

Virtual Address Space = Size of process

Number of pages the process is divided = Process size / Page size

If process size = 2^X, then number of bits in virtual address space = X bits

FOR PAGE TABLE

Size of page table = Number of entries in page table **x** Page table entry size

Number of entries in pages table = Number of pages the process is divided

Page table entry size = Number of bits in frame number + Number of bits used for optional fields, if any.

In general, if the given address consists of ‘n’ bits, then using ‘n’ bits, 2^n locations are possible.

- Then, size of memory = 2^n x Size of one location.

If the memory is **byte-addressable**, then size of one location = 1 byte.

- Thus, size of memory = 2^n bytes.

If the memory is **word-addressable** where 1 word = m bytes, then size of one location = m bytes.

- Thus, size of memory = 2^n x m bytes.