Nama : Faizal Wahyu N

NIM : L200180011

Kelas : A

1. Buatlah t[able pemetaan memori pada PC selengkap mungkin.](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png)

# Peme[taan Langsung (Direct Mapping)](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png)

Pemetaan la[ngsung adalah teknik yang paling sederhana, yaitu teknik ini](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) memetakan blok memor[i](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png) [utama hanya ke sebuah saluran cache saja. Jika suatu](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png) [block](https://2.bp.blogspot.com/-PE1xrgRaBpA/WBHlZVWaTZI/AAAAAAAABDk/nEnnc8tz-sYM7rTMIxVInJ8zOqq_g-OEgCLcB/s1600/Contoh%2BPengalamatan%2BAssociative%2BMapping.png) [a](https://2.bp.blogspot.com/-PE1xrgRaBpA/WBHlZVWaTZI/AAAAAAAABDk/nEnnc8tz-sYM7rTMIxVInJ8zOqq_g-OEgCLcB/s1600/Contoh%2BPengalamatan%2BAssociative%2BMapping.png)da di cache, maka tempa[tnya sudah tertentu. Keuntungan dari direct](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png) [mapping adalah](https://2.bp.blogspot.com/-PE1xrgRaBpA/WBHlZVWaTZI/AAAAAAAABDk/nEnnc8tz-sYM7rTMIxVInJ8zOqq_g-OEgCLcB/s1600/Contoh%2BPengalamatan%2BAssociative%2BMapping.png) [se](https://2.bp.blogspot.com/-PE1xrgRaBpA/WBHlZVWaTZI/AAAAAAAABDk/nEnnc8tz-sYM7rTMIxVInJ8zOqq_g-OEgCLcB/s1600/Contoh%2BPengalamatan%2BAssociative%2BMapping.png)derhana dan murah. [Sedangkan kerugian dari direct mapping](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png) [adalah suatu blok me](https://2.bp.blogspot.com/-PE1xrgRaBpA/WBHlZVWaTZI/AAAAAAAABDk/nEnnc8tz-sYM7rTMIxVInJ8zOqq_g-OEgCLcB/s1600/Contoh%2BPengalamatan%2BAssociative%2BMapping.png)miliki lokasi yang [tetap (jika program mengakses 2 blok yang](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png) [di map ke line yan](https://2.bp.blogspot.com/-PE1xrgRaBpA/WBHlZVWaTZI/AAAAAAAABDk/nEnnc8tz-sYM7rTMIxVInJ8zOqq_g-OEgCLcB/s1600/Contoh%2BPengalamatan%2BAssociative%2BMapping.png)g sama secara berul[ang-ulang, maka cache-miss sangat tinggi).](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png)

Be[rikut penjelasan lebih detail :](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)

* + Se[tiap blok pada main memory dipetakan dengan line tertentu p](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)ada *cache*. ***i*** [***= j modulo C*** di mana i adalah nomor line pada cache yang digu](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)nakan un[tuk meletakkan blok main memory ke-j.](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)
  + [Jika M = 64 dan C = 4, maka pemetaan antara line dengan blok](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) menjadi [seperti berikut :](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)

[Line 0 can hold blocks 0, 4, 8, 12, ...](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)

Line [1 can hold blocks 1, 5, 9, 13, ...](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)

Line [2 can hold blocks 2, 6, 10, 14, ...](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)

Line [3 can hold blocks 3, 7, 11, 15, ...](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)

Pa[da cara ini, *address* pada main memory dibagi 3 *field* atau bag](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)ian, yaitu: [Tag identifier.](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)

[Line number identifier](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) Word identifier (offset)

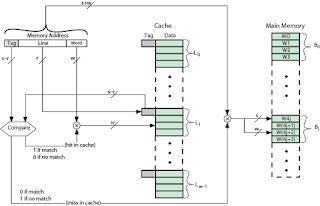
*Word identifier* berisi informasi tentang lokasi word atau unit *addressable* lainnya dalam line tertentu pada cache.

*Line identifier* berisi informasi tentang nomor fisik (bukan logika) line pada chace

*Tag identifier* disimpan pada cache bersama dengan blok pada *line*.

[Untuk setiap alamat memory yang dibuat oleh CPU, li](https://2.bp.blogspot.com/-PE1xrgRaBpA/WBHlZVWaTZI/AAAAAAAABDk/nEnnc8tz-sYM7rTMIxVInJ8zOqq_g-OEgCLcB/s1600/Contoh%2BPengalamatan%2BAssociative%2BMapping.png)ne tertentu [yang](https://2.bp.blogspot.com/-PE1xrgRaBpA/WBHlZVWaTZI/AAAAAAAABDk/nEnnc8tz-sYM7rTMIxVInJ8zOqq_g-OEgCLcB/s1600/Contoh%2BPengalamatan%2BAssociative%2BMapping.png) [menyimpan copy alamat tsb ditentukan, jika blo](https://2.bp.blogspot.com/-PE1xrgRaBpA/WBHlZVWaTZI/AAAAAAAABDk/nEnnc8tz-sYM7rTMIxVInJ8zOqq_g-OEgCLcB/s1600/Contoh%2BPengalamatan%2BAssociative%2BMapping.png)k tempat [lokasi data tersebut](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) [sudah dikopi dari main memory ke](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) *cache*.

[*Tag* yang ada pada line akan dicek untuk melihat apaka](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png)h benar blok [yang](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) [dimaksud ada line tsb.](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png)



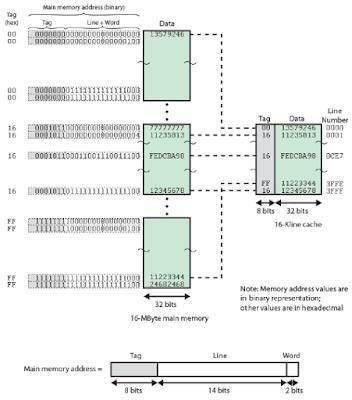
[Gambar 2.1 : Gambar Organisasi Direct Mapping.](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png)

Keuntungan [Menggunakan Direct Mapping antara lain :](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png)

1. [Mudah dan Murah diimplementasikan](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png)
2. [Mudah untuk menentukan letak salinan data main memory pada ch](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png)ace.

Kerugian m[enggunakan Direct Mapping antara lain :](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png)

1. Se[tiap blok *main memory* hanya dipetakan pada 1 line saja.](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png)
2. Te[rkait dengan sifat lokal pada *main memory*, sangat mungkin m](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png)engakses blok yang di[petakan pada *line* yang sama pada *cache*. Blok seperti ini aka](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)n menyebabka[n seringnya sapu masuk dan keluar data ke/dari *cache*, sehing](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)ga *hit ratio* menge[cil. *Hit ratio* adalah perbandingan antara jumlah ditemukanny](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)a data pada cache denga[n jumlah usaha mengakses *cache*.](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)



[Gambar 2.2 : Gambar Contoh Pengalamatan Direct Mapping.](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png)

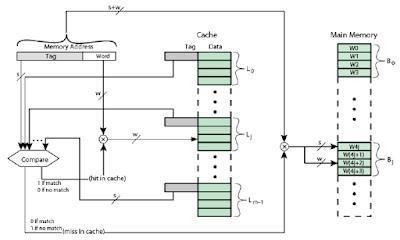
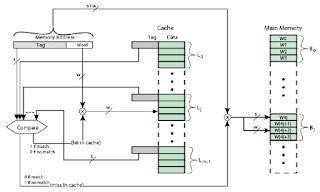
Ringkasan [*direct mapping* nampak pada tabel berikut:](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png)

|  |  |
| --- | --- |
| **Item** | [**Keterangan**](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) |
| Panjang ala[mat](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) | [(s+w) bits](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) |
| Jumlah unit [yang dapat dialamati](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) | [2s+w words or bytes](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) |
| Ukura[n Bloks sama dengan ukuran Line](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) | [2w words or bytes](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) |
| Jumlah blok [memori utama](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) | [2s+ w/2w = 2s](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) |
| Jumlah line [di chace](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) | [M = 2r](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) |
| Besarnya ta[g](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) | [(s - r) bits](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) |

# Peme[taan Asosiatif (Associative Mapping)](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)

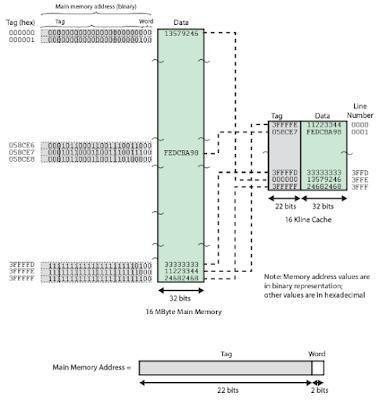
Pemetaan [asosiatif mengatasi kekurangan pemetaan langsung dengan cara](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) mengizinkan [setiap blok memori utama untuk dimuatkan ke sembarang sa](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)luran cache. Dengan pem[etaan assosiatif, terdapat fleksibilitas penggantian blok ketika](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) blok baru dibaca ke dalam cache. Kekurangan pemetaan asosiatif yang utama adalah kompleksitas rangkaian yang diperlukan untuk menguji tag seluruh saluran cache secara parallel, sehingga pencarian data di cache menjadi lama.

* 1. Memungkinkan blok diletakkan di sebarang line yang sedang tidak terpakai.
  2. Diharapkan akan mengatasi kelemahan utama *Direct Mapping*.
  3. Harus menguji setiap *cache* untuk menemukan blok yang diinginkan.
  4. Mengecek setiap tag pada line
  5. Sangat lambat untuk *cache* berukuran besar.
  6. Nomor line menjadi tidak berarti. *Address main memory* dibagi menjadi 2 field saja, yaitu tag dan *word offset*.



[Gambar 2.3 : Gambar Organisasi *Associative Mapping*.](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)

* 1. [Melakukan pencarian ke semua tag untuk menemukan blok.](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)
  2. Ca[che dibagi menjadi 2 bagian : Lines dalamSRAM](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)
     + T[ag dalam associative memory](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)



G[ambar 2.4 : Gambar Contoh Pengalamatan Associative Mappi](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png)ng

Ke[untungan *Associative Mapping* : Cepat dan fleksibel.](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)

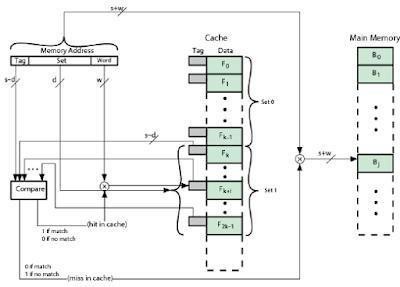
Ker[ugian *Associative Mapping* : Biaya Implementasi, misalnya unt](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)uk cache ukur[an 8 kbyte dibutuhkan 1024 x 17 bit *associative memory* untu](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)k men[yimpan *tag identifier*.](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) Ring[kasan *Associative Mapping* nampak pada](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) [tabel berikut:](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)

|  |  |
| --- | --- |
| **Item** | [**Keterangan**](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) |
| Panjang ala[mat](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) | [(s+w) bits](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) |
| Jumlah unit [yang dapat dialamati](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) | [2s+w words or bytes](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) |
| Ukura[n Bloks sama dengan ukuran Line](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) | [2w words or bytes](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) |
| Jumlah bl[ok memori utama](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) | [2s+ w/2w = 2s](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) |
| Jumlah line [di chace](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) | [Undetermined](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) |
| Besarnya ta[g](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) | [s bits](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) |

# Pemetaan Asosiatif Set (Set Associative Mapping)

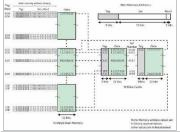
Pada pemetaan ini, cache dibagi dalam sejumlah sets. Setiap set berisi sejumlah line. Pemetaan asosiatif set memanfaatkan kelebihan-kelebihan pendekatan pemetaan langsung dan pemetaan asosiatif.

1. Merupakan kompromi antara *Direct* dengan *Full Associative Mapping*.
2. Membagi cache menjadi sejumlah set (v) yang masing-masing memiliki sejumlah line (k)Se[tiap blok dapat diletakkan di sebarang line dengan nomor se](https://2.bp.blogspot.com/-PE1xrgRaBpA/WBHlZVWaTZI/AAAAAAAABDk/nEnnc8tz-sYM7rTMIxVInJ8zOqq_g-OEgCLcB/s1600/Contoh%2BPengalamatan%2BAssociative%2BMapping.png)t: ***nomor set*** [***= j modulo v***](https://2.bp.blogspot.com/-PE1xrgRaBpA/WBHlZVWaTZI/AAAAAAAABDk/nEnnc8tz-sYM7rTMIxVInJ8zOqq_g-OEgCLcB/s1600/Contoh%2BPengalamatan%2BAssociative%2BMapping.png)



Ga[mbar 2.5 : Gambar Organisasi K-Way Set Associative Mappi](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png)ng.

1. Jika sebua[h](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png) [set dapat menampung X line, maka cache disebut memiliki](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png) X *way set associative c*[*ache*.](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png)
2. Hampir se[mua *cache* yang digunakan saat ini menggunakan organisasi](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png) 2 atau 4-*way set as*[*sociative mapping*.](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png)



Gambar 2.6 : Gambar Contoh Pengalamatan 2-Way Associative Mapping.

Keuntungan menggunakan *Set Associative Mapping* antara lain:

* + Setiap blok memori dapat menempati lebih dari satu kemungkinan nomor line (dapat menggunakan line yang kosong), sehingga thrashing dapat diperkecil.
  + Jumlah tag lebih sedikit (dibanding model *associative*), sehingga jalur untuk melakukan perbandingan tag lebih sederhana.

Ringkasan *Se*[*t Associative Mapping* nampak pada tabel berikut:](https://2.bp.blogspot.com/-PE1xrgRaBpA/WBHlZVWaTZI/AAAAAAAABDk/nEnnc8tz-sYM7rTMIxVInJ8zOqq_g-OEgCLcB/s1600/Contoh%2BPengalamatan%2BAssociative%2BMapping.png)

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| --- | --- |
| **Item** | [**Keterangan**](https://2.bp.blogspot.com/-PE1xrgRaBpA/WBHlZVWaTZI/AAAAAAAABDk/nEnnc8tz-sYM7rTMIxVInJ8zOqq_g-OEgCLcB/s1600/Contoh%2BPengalamatan%2BAssociative%2BMapping.png) |
| Panjang ala[mat](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) | [(s+w) bits](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) |
| Jumlah unit [yang dapat dialamati](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) | [2s+w words or bytes](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) |
| Ukura[n Bloks sama dengan ukuran Line](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) | [2w words or bytes](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) |
| Jumlah bl[ok memori utama](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) | [2d](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) |
| Jumlah line [dalam set](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) | [k](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) |
| Jumlah set | [V=2d](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) |
| Jumlah line [di chace](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) | [Kv = k\*2d](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) |
| Besarnya ta[g](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) | [( s – d )bits](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) |

1. Baca [buku referensi, jelaskan perbedaan antara mode kerja ‘real-Mode’ d](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png)an mode kerja ‘Potec[t -Mode’ pada PC IBM Compatible.](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png)
   * Real-Mode

Real-Mode ada[lah sebuah modus di mana prosesor Intel x86 berjalan seolah-o](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png)lah dirinya adalah sebuah p[rosesor Intel 8085 atau Intel 8088, meski ia merupakan](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) [proses](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png)or Intel 80286 atau lebih [tinggi. Karenanya, modus ini juga disebut sebagai](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png) [modus 80](https://4.bp.blogspot.com/-CwhSVnv77mg/WBHl0XQWjuI/AAAAAAAABDo/bjK387GmLMoZJxZrUQ3GrEQPnYlitRkAwCLcB/s1600/Organisasi%2BK-Way%2BSet%2BAssociative%2BMapping.png)86 (8086 Mode). Dalam m[odus ini, prosesor hanya dapat mengeksekusi](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png) [instruksi 16-bit](https://2.bp.blogspot.com/-PE1xrgRaBpA/WBHlZVWaTZI/AAAAAAAABDk/nEnnc8tz-sYM7rTMIxVInJ8zOqq_g-OEgCLcB/s1600/Contoh%2BPengalamatan%2BAssociative%2BMapping.png) saja dengan menggu[nakan register internal yang berukuran 16-bit,](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png) [serta hanya dap](https://2.bp.blogspot.com/-PE1xrgRaBpA/WBHlZVWaTZI/AAAAAAAABDk/nEnnc8tz-sYM7rTMIxVInJ8zOqq_g-OEgCLcB/s1600/Contoh%2BPengalamatan%2BAssociative%2BMapping.png)at mengakses hany[a](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png) [1024 KB dari memori karena hanya](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png) [menggunakan 20-bit ja](https://2.bp.blogspot.com/-PE1xrgRaBpA/WBHlZVWaTZI/AAAAAAAABDk/nEnnc8tz-sYM7rTMIxVInJ8zOqq_g-OEgCLcB/s1600/Contoh%2BPengalamatan%2BAssociative%2BMapping.png)lur bus alamat. Semua p[rogram DOS berjalan pada modus](https://2.bp.blogspot.com/-3DXyQBgwNQo/WBHlBBg6oQI/AAAAAAAABDU/jkpEOV0d1Jsaay0YAjoaLB7hii-ZARrYQCLcB/s1600/Organisasi%2BAssociative%2BMapping.png) [ini.](https://2.bp.blogspot.com/-PE1xrgRaBpA/WBHlZVWaTZI/AAAAAAAABDk/nEnnc8tz-sYM7rTMIxVInJ8zOqq_g-OEgCLcB/s1600/Contoh%2BPengalamatan%2BAssociative%2BMapping.png) Processor yang [dirilis setelah 8085, semacam Intel 80286 juga dapat](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) [menjalank](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)an instruksi 16-bit, tapi jauh [lebih cepat dibandingkan 8085. Dengan](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)

[kata lain, Intel 80286](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) benar-benar [kompatibel dengan prosesor Intel 8086 yang](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) [didesain sebelumnya.](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) Sehingga prosesor Intel 8[0286 pun dapat menjalankan](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) [program-program 16-bit yang di](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)desain untuk 8085 (IBM PC)[, dengan tentunya](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) [kecepatan yang jauh lebih tinggi.](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) Dalam Real-[mode, tidak ada proteksi ruang](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) [alamat memori, sehingga tidak da](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)pat melakukan mult[i-tasking. Inilah sebabnya,](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) [mengapa program-program DOS b](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)ersifat single-tasking. J[ika dalam modus real](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) [terdapat multi-tasking, maka kemungki](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)nan besar antara dua progr[am yang sedang](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) [berjalan, terjadi tabrakan (crash) antara satu](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) dengan lainnya.

* + Protecte[d Mode](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)

Modus terprote[ksi (protected mode) adalah sebuah modus di mana](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) [terdapat pr](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)oteksi ruang alamat m[emori yang ditawarkan oleh mikroprosesor](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png) [untuk digunakan o](https://4.bp.blogspot.com/-6djf3U5Pdws/WBHmLMpdDwI/AAAAAAAABDw/w_SKHRc6LnoRaa0YqW7We52RB-Xeen5sQCLcB/s1600/Contoh%2BPengalamatan%2B2-Way%2BAssociative%2BMapping.png)leh sistem operasi. Modus ini datang dengan mikroprosesor Intel 80286 atau yang lebih tinggi.

Karena memiliki proteksi ruang alamat memori, maka dalam modus ini sistem operasi dapat melakukan multitasking.

Prosesor Intel 80286 memang dilengkapi kemampuan masuk ke dalam modus terproteksi, tapi tidak dapat keluar dari modus tersebut tanpa harus mengalami reset (warm boot atau cold boot). Kesalahan ini telah diperbaiki oleh Intel dengan merilis prosesor Intel 80386 yang dapat masuk ke dalam modus terproteksi dan keluar darinya tanpa harus melakukan reset. Inilah sebabnya mengapa Windows 95/Windows 98 dilengkapi dengan modus Restart in MS-DOS Mode, meski sebenarnya sistem operasi tersebut merupakan sistem operasi yang berjalan dalam modus terproteksi.