

I- Sub-system CF

1- Age range

Age	Age range	Symbol
≤ 24	1	1
[18 , 24]	18	2
[25 , 34]	25	3
[35 , 44]	35	4
[45 , 49]	45	5
[50 , 55]	50	6
≥ 56	56	7

2- Gender

Gender	Symbol
'M'	1
'F'	2

3- Occupation

Frequency of occupation	Symbol
≤ 50	1
[51 , 100]	2
[101 , 200]	3
[201 , 300]	4
[301 , 400]	5
[401 , 600]	6
≥ 601	7

4- ZipCode

Frequency of first-character(zipcode)	Symbol
≤ 400	1
[401 , 500]	2
[501 , 700]	3
≥ 701	4

II- Sub-system CB

1- Movie genre (5 clusters => 31 symbols)

Frequency of genre	Cluster
≥ 700	1
$[400, 700[$	2
$[200, 400[$	3
$[100, 200[$	4
< 100	5

2- Release date

Release date	Symbol
≤ 1979	1
$[1980, 1985]$	2
$[1986, 1990]$	3
$[1991, 1995]$	4
$[1996, 2000]$	5
$[2001, 2005]$	6
$[2006, 2010]$	7
$[2011, 2015]$	8
$[2016, 2020]$	9
≥ 2021	10

3- Vote average

Vote average	Symbol
$[0, 0.5]$	1
$]0.5, 1]$	2
$]1, 1.5]$	3
$]1.5, 2]$	4
$]2, 2.5]$	5
$]2.5, 3]$	6
$]3, 3.5]$	7
$]3.5, 4]$	8
$]4, 4.5]$	9
> 4.5	10

4- Vote count

Vote count	Symbol
[0 , 10]	1
[11 , 50]	2
[51 , 100]	3
[101 , 250]	4
[251 , 500]	5
[501 , 1000]	6
[1001 , 1500]	7
[1501 , 2000]	8
[2001 , 2500]	9
≥ 2501	10

III- Hybrid system

1- Score

Score	Symbol
[0 , 1]	1
]1 , 2]	2
]2 , 3]	3
]3 , 4]	4
> 4	5