ESTIMATION FOR STORAGE REGUIREMENTS

Dim\_Promotions

1. **Number of rows per table:**

the number of rows per table = 503.if you plan for 6 times the growth, number of rows will = 503\*6 = 3018 rows

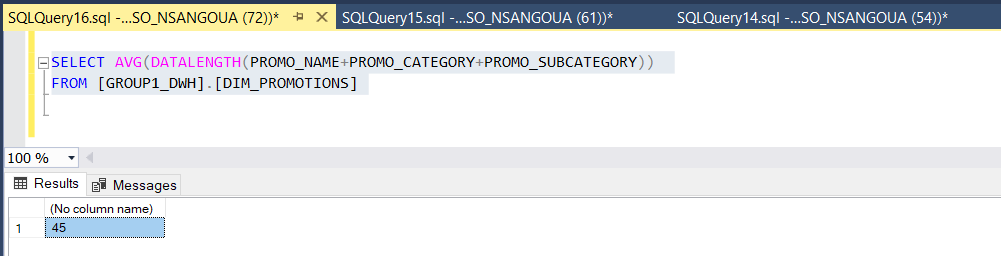
2. **Calculate total row size:** # of columns = 8

**a. Determine fixed data size:**

|  |  |  |
| --- | --- | --- |
| Attribute | Date type | Bytes |
| Promo\_pk | int | 4 |
| promo\_id | int | 4 |
| promo\_begin\_date | datetime | 8 |
| promo\_end\_date | datetime | 8 |
| promo\_cost | Decimal (8,2) | 5 |
| Total fixed data size |  | 29 |

**b. Determine Variable Data Size**

There are 3 variable-length columns: PROMO\_NAME, PROMO\_SUBCATEGORY, PROMO\_CATEGORY, .



VARIABLE\_DATA\_SIZE = 2+(3\*2) +45= 53

**c. Determine NULL Bitmap**

Size Null Bitmap Size = 2 bytes that store # of columns in null bitmap + Ceiling ((# of columns/8)) = 2 + Ceiling (8/8) = 2 + Ceiling (1) = 3

**d. Determine Total Row Size**

Total Row Size = 4 + 29 +53+3 = 89

3. **Calculate # of rows per page (blocking factor) 1**

ROWS\_PER\_PAGE = Floor (8096/ (ROW\_SIZE + 2 for entry in record offset array)) = Floor (8096/(89+ 2)) = **89 rows per page**

4. Calculate # of page needed for a Heap Table # of pages needed = Ceiling (Rows in Table / # of rows per page) = Ceiling (3018/89) = 34 pages

5. Calculate Heap Size for DIM\_PROMOTIONS

Heap size = page size × number of pages = 8192 \* 34 = 278528 Bytes

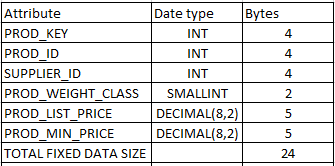
DIM\_PRODUCTS

1. Find number of rows per table:

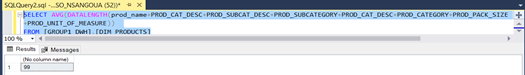
the number of rows per table = 72. If we plan for 2 times its growth, number of rows will =72\*2 = 144 rows

2. Calculate total row size: # of columns = 14

a. Determine fixed data size:



b. Determine Variable Data Size : There are 8 variables size data



VARIABLE\_DATA\_SIZE = 2+(8\*2) +99= 117

c. Determine NULL Bitmap

Size Null Bitmap Size = 2 bytes that store # of columns in null bitmap + Ceiling ((# of columns/8)) = 2 + Ceiling (14/8) = 2 + Ceiling (1.75) = 2 + 2 = 4

d. Determine Total Row Size

Total Row Size = 4 bytes for row header + FIXED\_DATA\_SIZE + Null Bitmap + VARIABLE\_DATA\_SIZE

Total Row Size = 4 + 24+ 117+4 = 149 bytes

3. Calculate # of rows per page (blocking factor) 1

ROWS\_PER\_PAGE = Floor (8096/ (ROW\_SIZE + 2 for entry in record offset array)) = (8096/(149+ 2)) = (53.62) = 54 rows per page

4. Calculate # of pages needed for a Heap Table # of pages needed = Ceiling (Rows in Table / # of rows per page) = Ceiling (144/149) = 0.97 pages

5. Calculate Heap Size Heap size = page size × number of pages = 8192 × 0.97 = 7946.24 Bytes

DIM\_CHANNELS

1. Find number of rows per table:

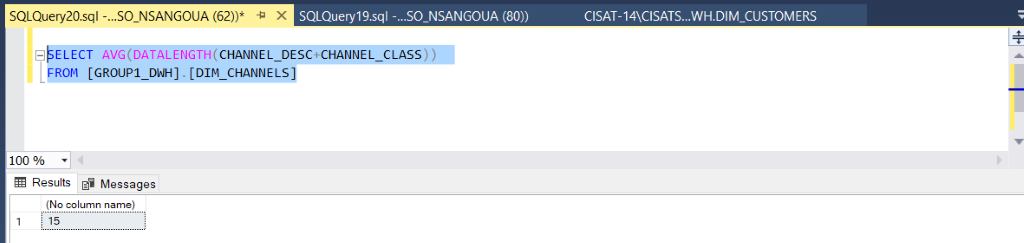
the number of rows per table = 6 if you plan for 2 times the growth, number of rows will = 6\*2 = 12 rows

2. Calculate total row size: # of columns = 4

a. Determine fixed data size:

|  |  |  |
| --- | --- | --- |
| Attribute | Date type | Bytes |
| Channel\_id | int | 4 |
| Channel\_Pk | int | 4 |
| Total fixed data size |  | 8 |

b. Determine Variable Data Size

There are 2 variable-length columns: CHANNEL\_DESC, CHANNEL\_CLASS  VARIABLE\_DATA\_SIZE: 2 + (2\*2) + 15 = 21

c. Determine NULL Bitmap

Size Null Bitmap Size = 2 bytes that store # of columns in null bitmap + Ceiling ((# of columns/8)) = 2 + Ceiling (4/8) = 2 + Ceiling (0.5) = 2 + 1 = 3

d. Determine Total Row Size

Total Row Size = 4 bytes for row header + FIXED\_DATA\_SIZE + Null Bitmap + VARIABLE\_DATA\_SIZE

Total Row Size = 4 + 8 +3+21 = 36 bytes

3. Calculate # of rows per page (blocking factor) 1

ROWS\_PER\_PAGE = Floor (8096/ (ROW\_SIZE + 2 for entry in record offset array)) = Floor (8096/(36+ 2)) = Floor (213.05) = 213 rows per page

4. Calculate # of pages needed for a Heap Table # of pages needed = Ceiling (Rows in Table / # of rows per page) = Ceiling (12/213) = 0.06page

5. Calculate Heap Size Heap size = page size × number of pages = 8192 × 0.06= 528 Bytes

DIM\_CUSTOMERS

1. The number of rows = DIM\_CUSTOMERS. if you plan for 2 times the growth, number of rows will = 55500 = 111000 rows

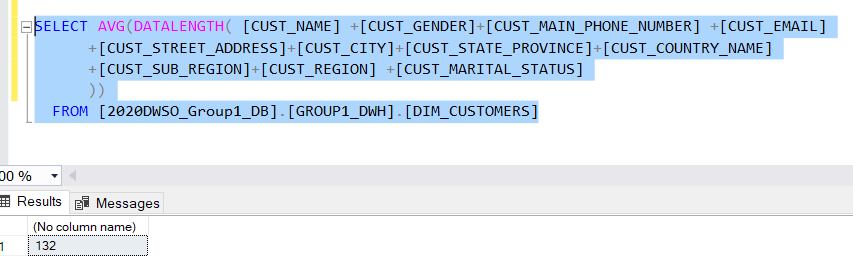
2. Calculate total row size: # of columns = 30

a. Determine fixed data size:

|  |  |  |
| --- | --- | --- |
| Attribute | Date type | Bytes |
| cust\_key | int | 4 |
| cust\_id | int | 4 |
| cust\_postal\_code | int | 4 |
| cust\_year\_of\_birth | smallint | 2 |
| cust\_education | int | 4 |
| cust\_no-of-children | int | 4 |
| cust\_checking\_bal | int | 4 |
| cust\_race | int | 4 |
| cust\_income | float | 4 |
| cust\_assets | int | 4 |
| cust\_houses | int | 4 |
| cust\_stocks | int | 4 |
| cust\_bonds | int | 4 |
| cust-home\_equity | int | 4 |
| cust\_networth | int | 4 |
| cust\_version | smallint | 2 |
| cust\_date\_from | datetime | 8 |
| cust\_date\_through | datetime | 8 |
| Total fixed data size |  | 76 |

b. Determine Variable Data Size

There are 11 variable-length columns:



VARIABLE\_DATA\_SIZE: 2 + (11\*2) + 132 = 156

c. Determine NULL Bitmap

Size Null Bitmap Size = 2 bytes that store # of columns in null bitmap + Ceiling ((# of columns/8)) = 2 + Ceiling (30/8) = 2 + Ceiling (3.75) = 2 + 4 = 6

d. Determine Total Row Size

Total Row Size = 4 bytes for row header + FIXED\_DATA\_SIZE + Null Bitmap + VARIABLE\_DATA\_SIZE

Total Row Size = 4 + 76+6+156 = 242 bytes

3. Calculate # of rows per page (blocking factor) 1

ROWS\_PER\_PAGE = Floor (8096/ (ROW\_SIZE + 2 for entry in record offset array)) = Floor (8096/(242+ 2)) = Floor (33.18) = 33 rows per page

4. Calculate # of pages needed for a Heap Table # of pages needed = Ceiling (Rows in Table / # of rows per page) = Ceiling (111000/33) = 3364 pages ceiling

5. Calculate Heap Size = page size × number of pages = 8192 × 3364= 27557888 Bytes

DIM\_DATE

1. Find number of rows per table:

the number of rows per table = 7350. If we plan for 2 times its growth, number of rows will = 7350\*2 = 14700 rows

2. Calculate total row size: # of columns = 26

a. Determine fixed data size: 104

b. Determine Variable Data Size : There is not variable data size

c. Determine NULL Bitmap

Size Null Bitmap Size = 2 bytes that store # of columns in null bitmap + Ceiling ((# of columns/8)) = 2 + Ceiling (26/8) = 2 + Ceiling (3.25) = 2 + 4= 6

d. Determine Total Row Size

Total Row Size = 4 bytes for row header + FIXED\_DATA\_SIZE + Null Bitmap + VARIABLE\_DATA\_SIZE

Total Row Size = 4 + 104+ 6 = 114 bytes

3. Calculate # of rows per page (blocking factor) 1

ROWS\_PER\_PAGE = Floor (8096/ (ROW\_SIZE + 2 for entry in record offset array)) = (8096/(114+ 2)) = (69.79) = 70rows per page

4. Calculate # of pages needed for a Heap Table # of pages needed = Ceiling (Rows in Table / # of rows per page) = Ceiling (14700/70) = 210 pages

5. Calculate Heap Size = page size × number of pages = 8192 × 210 = 1720320 Bytes

DIM\_AGENTS

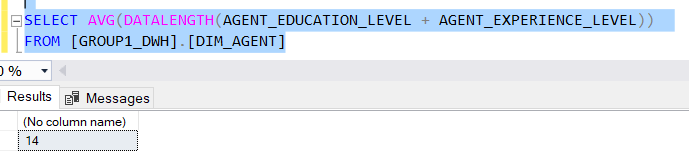
1. Find number of rows per table:

the number of rows per table = 524. If we plan for 2 times its growth, number of rows will = 524\*2 = 1048 rows

2. Calculate total row size: # of columns = 4

a. Determine fixed data size: AGENT\_KEY + AGENT\_ID = 4+4 = 8

b. Determine Variable Data Size :



There are 2 variables = 2+ (2\*2) +14 = 20

c. Determine NULL Bitmap

Size Null Bitmap Size = 2 bytes that store # of columns in null bitmap + Ceiling ((# of columns/8)) = 2 + Ceiling (4/8) = 2 + Ceiling (0.5) = 2 + 1= 3

d. Determine Total Row Size

Total Row Size = 4 bytes for row header + FIXED\_DATA\_SIZE + Null Bitmap + VARIABLE\_DATA\_SIZE

Total Row Size = 4 + 8+ 20 = 32 bytes

3. Calculate # of rows per page (blocking factor) 1

ROWS\_PER\_PAGE = Floor (8096/ (ROW\_SIZE + 2 for entry in record offset array)) = (8096/(32+ 2)) = (238.117) = 238 rows per page

4. Calculate # of pages needed for a Heap Table # of pages needed = Ceiling (Rows in Table / # of rows per page) = Ceiling (1048/238) = 4.40 OR 5 pages ceiling

5. Calculate Heap Size = page size × number of pages = 8192 × 5 = 40960 Bytes

CUSTOMER\_PAYMENT\_SUMMARY is estimated at 1820320 bytes

CUSTOMER\_SALES\_SUMMARY is estimated 153042 bytes

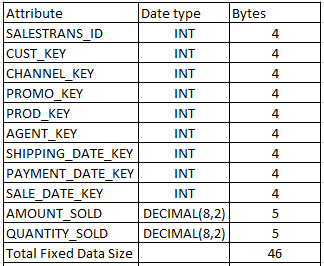
FACT\_ORDERS:

1. Find number of rows per table:

the number of rows per table = 504564. If we plan for 2 times its growth, number of rows will = 504564\*2 = 1081128 rows

2. Calculate total row size: # of columns = 11

a. Determine fixed data size:



b. Determine Variable Data Size: There is not variable data size

c. Determine NULL Bitmap

Size Null Bitmap Size = 2 bytes that store # of columns in null bitmap + Ceiling ((# of columns/8)) = 2 + Ceiling (11/8) = 2 + Ceiling (1.375) = 2 + 2 = 4

d. Determine Total Row Size

Total Row Size = 4 bytes for row header + FIXED\_DATA\_SIZE + Null Bitmap + VARIABLE\_DATA\_SIZE

Total Row Size = 4 + 46 + 4 = 54 bytes

3. Calculate # of rows per page (blocking factor) 1

ROWS\_PER\_PAGE = Floor (8096/ (ROW\_SIZE + 2 for entry in record offset array)) = (8096/(54+ 2)) = (144.5714) = 145 rows per page

4. Calculate # of pages needed for a Heap Table # of pages needed = Ceiling (Rows in Table / # of rows per page) = Ceiling (1081128/145) = 7456 pages

5. Calculate Heap Size = page size × number of pages = 8192 × 7456 = 61079552 Bytes