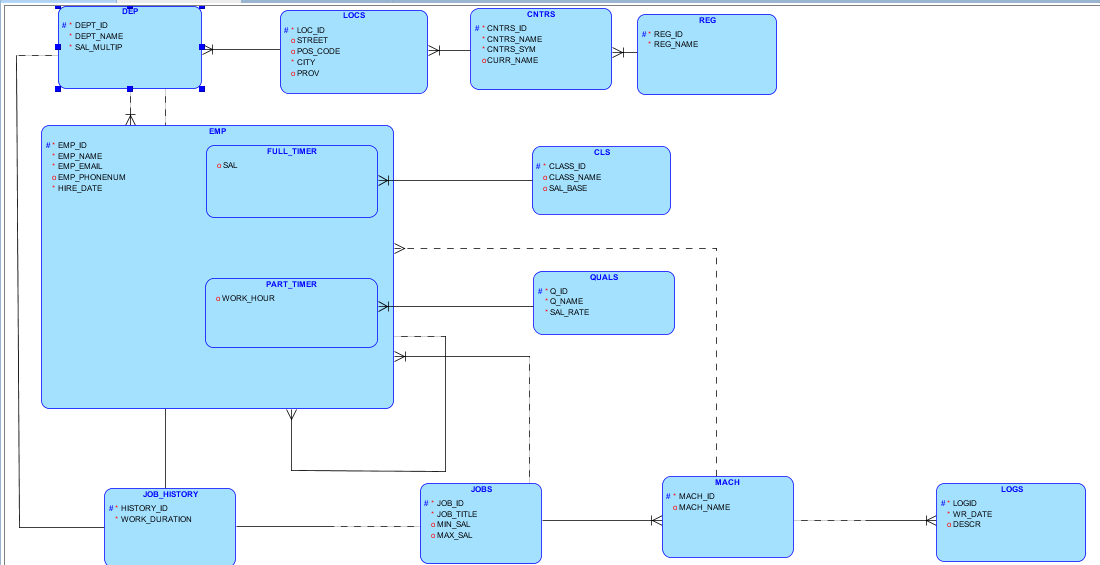
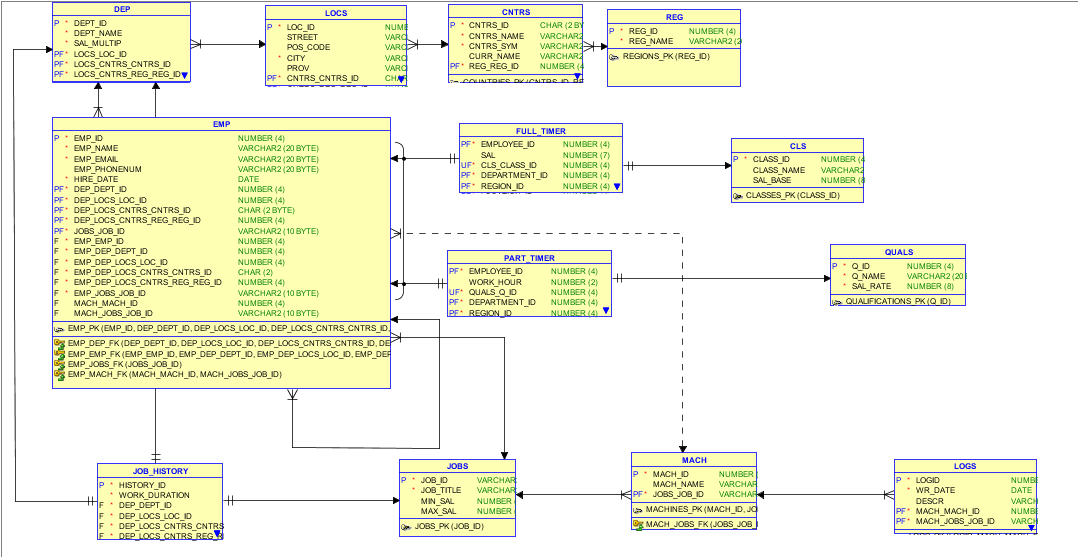
1. Design ERD Conceptual & Physical (Relational) di Data Modeller

Logical:



Relational :

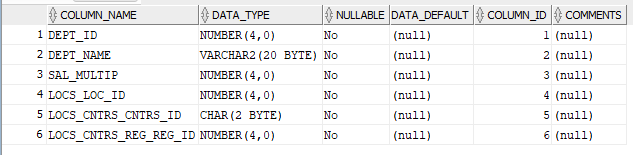


1. Syntax DDL

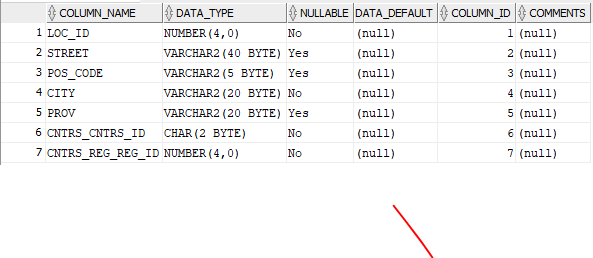
|  |
| --- |
| CREATE TABLE cls (  class\_id NUMBER(4) NOT NULL,  class\_name VARCHAR2(20 BYTE),  sal\_base NUMBER(8)  );  ALTER TABLE cls ADD CONSTRAINT classes\_pk PRIMARY KEY ( class\_id );  CREATE TABLE cntrs (  cntrs\_id CHAR(2 BYTE) NOT NULL,  cntrs\_name VARCHAR2(30 BYTE) NOT NULL,  cntrs\_sym VARCHAR2(3 BYTE) NOT NULL,  curr\_name VARCHAR2(20 BYTE),  reg\_reg\_id NUMBER(4) NOT NULL  );  ALTER TABLE cntrs ADD CONSTRAINT countries\_pk PRIMARY KEY ( cntrs\_id,  reg\_reg\_id );  CREATE TABLE dep (  dept\_id NUMBER(4) NOT NULL,  dept\_name VARCHAR2(20 BYTE) NOT NULL,  sal\_multip NUMBER(4) NOT NULL,  locs\_loc\_id NUMBER(4) NOT NULL,  locs\_cntrs\_cntrs\_id CHAR(2 BYTE) NOT NULL,  locs\_cntrs\_reg\_reg\_id NUMBER(4) NOT NULL  );  ALTER TABLE dep  ADD CONSTRAINT departments\_pk PRIMARY KEY ( dept\_id,  locs\_loc\_id,  locs\_cntrs\_cntrs\_id,  locs\_cntrs\_reg\_reg\_id );  CREATE TABLE emp (  emp\_id NUMBER(4) NOT NULL,  emp\_name VARCHAR2(20 BYTE) NOT NULL,  emp\_email VARCHAR2(20 BYTE) NOT NULL,  emp\_phonenum VARCHAR2(20 BYTE),  hire\_date DATE NOT NULL,  dep\_dept\_id NUMBER(4) NOT NULL,  dep\_locs\_loc\_id NUMBER(4) NOT NULL,  dep\_locs\_cntrs\_cntrs\_id CHAR(2 BYTE) NOT NULL,  dep\_locs\_cntrs\_reg\_reg\_id NUMBER(4) NOT NULL,  jobs\_job\_id VARCHAR2(10 BYTE) NOT NULL,  emp\_emp\_id NUMBER(4) NOT NULL,  emp\_dep\_dept\_id NUMBER(4) NOT NULL,  emp\_dep\_locs\_loc\_id NUMBER(4) NOT NULL,  emp\_dep\_locs\_cntrs\_cntrs\_id CHAR(2) NOT NULL,  emp\_dep\_locs\_cntrs\_reg\_reg\_id NUMBER(4) NOT NULL,  emp\_jobs\_job\_id VARCHAR2(10 BYTE) NOT NULL,  mach\_mach\_id NUMBER(4),  mach\_jobs\_job\_id VARCHAR2(10 BYTE)  );  ALTER TABLE emp  ADD CONSTRAINT emp\_pk PRIMARY KEY ( emp\_id,  dep\_dept\_id,  dep\_locs\_loc\_id,  dep\_locs\_cntrs\_cntrs\_id,  dep\_locs\_cntrs\_reg\_reg\_id,  jobs\_job\_id );  CREATE TABLE full\_timer (  employee\_id NUMBER(4) NOT NULL,  sal NUMBER(7),  cls\_class\_id NUMBER(4) NOT NULL,  department\_id NUMBER(4) NOT NULL,  region\_id NUMBER(4) NOT NULL,  location\_id NUMBER(4) NOT NULL,  job\_id VARCHAR2(10 BYTE) NOT NULL,  country\_id CHAR(2) NOT NULL  );  ALTER TABLE full\_timer  ADD CONSTRAINT full\_timer\_pk PRIMARY KEY ( employee\_id,  department\_id,  location\_id,  country\_id,  region\_id,  job\_id );  ALTER TABLE full\_timer ADD CONSTRAINT full\_timer\_pkv1 UNIQUE ( cls\_class\_id );  CREATE TABLE job\_history (  history\_id NUMBER(4) NOT NULL,  work\_duration INTERVAL DAY(9) TO SECOND(0) NOT NULL,  dep\_dept\_id NUMBER(4) NOT NULL,  dep\_locs\_loc\_id NUMBER(4) NOT NULL,  dep\_locs\_cntrs\_cntrs\_id CHAR(2) NOT NULL,  dep\_locs\_cntrs\_reg\_reg\_id NUMBER(4) NOT NULL,  jobs\_job\_id VARCHAR2(10 BYTE) NOT NULL,  dep\_dept\_id1 NUMBER(4) NOT NULL,  dep\_locs\_loc\_id2 NUMBER(4) NOT NULL,  dep\_locs\_cntrs\_cntrs\_id2 CHAR(2 BYTE) NOT NULL,  dep\_locs\_cntrs\_reg\_reg\_id2 NUMBER(4) NOT NULL  );  CREATE UNIQUE INDEX job\_history\_\_idx ON  job\_history (  dep\_dept\_id  ASC,  dep\_locs\_loc\_id  ASC,  dep\_locs\_cntrs\_cntrs\_id  ASC,  dep\_locs\_cntrs\_reg\_reg\_id  ASC );  CREATE UNIQUE INDEX job\_history\_\_idxv1 ON  job\_history (  jobs\_job\_id  ASC );  CREATE UNIQUE INDEX job\_history\_\_idx ON  job\_history (  dep\_dept\_id1  ASC,  dep\_locs\_loc\_id2  ASC,  dep\_locs\_cntrs\_cntrs\_id2  ASC,  dep\_locs\_cntrs\_reg\_reg\_id2  ASC );  ALTER TABLE job\_history ADD CONSTRAINT job\_history\_pk PRIMARY KEY ( history\_id );  CREATE TABLE jobs (  job\_id VARCHAR2(10 BYTE) NOT NULL,  job\_title VARCHAR2(20 BYTE) NOT NULL,  min\_sal NUMBER(5),  max\_sal NUMBER(6)  );  ALTER TABLE jobs ADD CONSTRAINT jobs\_pk PRIMARY KEY ( job\_id );  CREATE TABLE locs (  loc\_id NUMBER(4) NOT NULL,  street VARCHAR2(40 BYTE),  pos\_code VARCHAR2(5),  city VARCHAR2(20) NOT NULL,  prov VARCHAR2(20),  cntrs\_cntrs\_id CHAR(2 BYTE) NOT NULL,  cntrs\_reg\_reg\_id NUMBER(4) NOT NULL  );  ALTER TABLE locs  ADD CONSTRAINT locations\_pk PRIMARY KEY ( loc\_id,  cntrs\_cntrs\_id,  cntrs\_reg\_reg\_id );  CREATE TABLE logs (  logid NUMBER(4) NOT NULL,  wr\_date DATE NOT NULL,  descr VARCHAR2(30 BYTE),  mach\_mach\_id NUMBER(4) NOT NULL,  mach\_jobs\_job\_id VARCHAR2(10 BYTE) NOT NULL  );  ALTER TABLE logs  ADD CONSTRAINT logs\_pk PRIMARY KEY ( logid,  mach\_mach\_id,  mach\_jobs\_job\_id );  CREATE TABLE mach (  mach\_id NUMBER(4) NOT NULL,  mach\_name VARCHAR2(30 BYTE),  jobs\_job\_id VARCHAR2(10 BYTE) NOT NULL  );  ALTER TABLE mach ADD CONSTRAINT machines\_pk PRIMARY KEY ( mach\_id,  jobs\_job\_id );  CREATE TABLE part\_timer (  employee\_id NUMBER(4) NOT NULL,  work\_hour NUMBER(2),  quals\_q\_id NUMBER(4) NOT NULL,  department\_id NUMBER(4) NOT NULL,  region\_id NUMBER(4) NOT NULL,  location\_id NUMBER(4) NOT NULL,  job\_id VARCHAR2(10 BYTE) NOT NULL,  country\_id CHAR(2) NOT NULL  );  ALTER TABLE part\_timer  ADD CONSTRAINT part\_timer\_pk PRIMARY KEY ( employee\_id,  department\_id,  location\_id,  country\_id,  region\_id,  job\_id );  ALTER TABLE part\_timer ADD CONSTRAINT part\_timer\_pkv1 UNIQUE ( quals\_q\_id );  CREATE TABLE quals (  q\_id NUMBER(4) NOT NULL,  q\_name VARCHAR2(20 BYTE) NOT NULL,  sal\_rate NUMBER(8) NOT NULL  );  ALTER TABLE quals ADD CONSTRAINT qualifications\_pk PRIMARY KEY ( q\_id );  CREATE TABLE reg (  reg\_id NUMBER(4) NOT NULL,  reg\_name VARCHAR2(20 BYTE) NOT NULL  );  ALTER TABLE reg ADD CONSTRAINT regions\_pk PRIMARY KEY ( reg\_id );  ALTER TABLE cntrs  ADD CONSTRAINT cntrs\_reg\_fk FOREIGN KEY ( reg\_reg\_id )  REFERENCES reg ( reg\_id );  ALTER TABLE dep  ADD CONSTRAINT dep\_locs\_fk FOREIGN KEY ( locs\_loc\_id,  locs\_cntrs\_cntrs\_id,  locs\_cntrs\_reg\_reg\_id )  REFERENCES locs ( loc\_id,  cntrs\_cntrs\_id,  cntrs\_reg\_reg\_id );  ALTER TABLE emp  ADD CONSTRAINT emp\_dep\_fk FOREIGN KEY ( dep\_dept\_id,  dep\_locs\_loc\_id,  dep\_locs\_cntrs\_cntrs\_id,  dep\_locs\_cntrs\_reg\_reg\_id )  REFERENCES dep ( dept\_id,  locs\_loc\_id,  locs\_cntrs\_cntrs\_id,  locs\_cntrs\_reg\_reg\_id );  ALTER TABLE emp  ADD CONSTRAINT emp\_emp\_fk FOREIGN KEY ( emp\_emp\_id,  emp\_dep\_dept\_id,  emp\_dep\_locs\_loc\_id,  emp\_dep\_locs\_cntrs\_cntrs\_id,  emp\_dep\_locs\_cntrs\_reg\_reg\_id,  emp\_jobs\_job\_id )  REFERENCES emp ( emp\_id,  dep\_dept\_id,  dep\_locs\_loc\_id,  dep\_locs\_cntrs\_cntrs\_id,  dep\_locs\_cntrs\_reg\_reg\_id,  jobs\_job\_id );  ALTER TABLE emp  ADD CONSTRAINT emp\_jobs\_fk FOREIGN KEY ( jobs\_job\_id )  REFERENCES jobs ( job\_id );  ALTER TABLE emp  ADD CONSTRAINT emp\_mach\_fk FOREIGN KEY ( mach\_mach\_id,  mach\_jobs\_job\_id )  REFERENCES mach ( mach\_id,  jobs\_job\_id );  ALTER TABLE full\_timer  ADD CONSTRAINT full\_timer\_cls\_fk FOREIGN KEY ( cls\_class\_id )  REFERENCES cls ( class\_id );  ALTER TABLE full\_timer  ADD CONSTRAINT full\_timer\_employees\_fk FOREIGN KEY ( employee\_id,  department\_id,  location\_id,  country\_id,  region\_id,  job\_id )  REFERENCES emp ( emp\_id,  dep\_dept\_id,  dep\_locs\_loc\_id,  dep\_locs\_cntrs\_cntrs\_id,  dep\_locs\_cntrs\_reg\_reg\_id,  jobs\_job\_id );  ALTER TABLE job\_history  ADD CONSTRAINT job\_history\_dep\_fk FOREIGN KEY ( dep\_dept\_id,  dep\_locs\_loc\_id,  dep\_locs\_cntrs\_cntrs\_id,  dep\_locs\_cntrs\_reg\_reg\_id )  REFERENCES dep ( dept\_id,  locs\_loc\_id,  locs\_cntrs\_cntrs\_id,  locs\_cntrs\_reg\_reg\_id );  ALTER TABLE job\_history  ADD CONSTRAINT job\_history\_dep\_fkv1 FOREIGN KEY ( dep\_dept\_id1,  dep\_locs\_loc\_id2,  dep\_locs\_cntrs\_cntrs\_id2,  dep\_locs\_cntrs\_reg\_reg\_id2 )  REFERENCES dep ( dept\_id,  locs\_loc\_id,  locs\_cntrs\_cntrs\_id,  locs\_cntrs\_reg\_reg\_id );  ALTER TABLE job\_history  ADD CONSTRAINT job\_history\_jobs\_fk FOREIGN KEY ( jobs\_job\_id )  REFERENCES jobs ( job\_id );  ALTER TABLE locs  ADD CONSTRAINT locs\_cntrs\_fk FOREIGN KEY ( cntrs\_cntrs\_id,  cntrs\_reg\_reg\_id )  REFERENCES cntrs ( cntrs\_id,  reg\_reg\_id );  ALTER TABLE logs  ADD CONSTRAINT logs\_mach\_fk FOREIGN KEY ( mach\_mach\_id,  mach\_jobs\_job\_id )  REFERENCES mach ( mach\_id,  jobs\_job\_id );  ALTER TABLE mach  ADD CONSTRAINT mach\_jobs\_fk FOREIGN KEY ( jobs\_job\_id )  REFERENCES jobs ( job\_id );  ALTER TABLE part\_timer  ADD CONSTRAINT part\_timer\_employees\_fk FOREIGN KEY ( employee\_id,  department\_id,  location\_id,  country\_id,  region\_id,  job\_id )  REFERENCES emp ( emp\_id,  dep\_dept\_id,  dep\_locs\_loc\_id,  dep\_locs\_cntrs\_cntrs\_id,  dep\_locs\_cntrs\_reg\_reg\_id,  jobs\_job\_id );  ALTER TABLE part\_timer  ADD CONSTRAINT part\_timer\_quals\_fk FOREIGN KEY ( quals\_q\_id )  REFERENCES quals ( q\_id ); |

1. Screenshot Bukti Struktur Tabel Telah Dibuat di SQL Developer

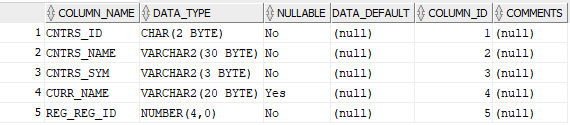
* Department



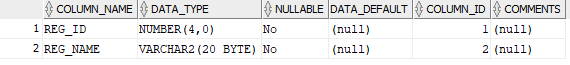
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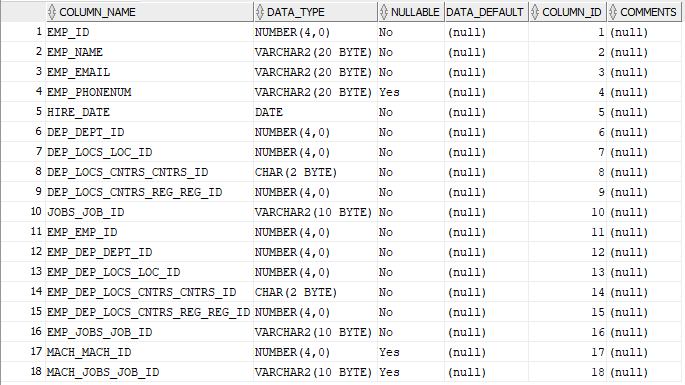
* Countries



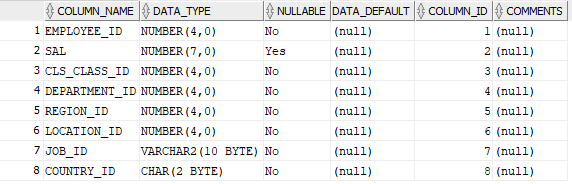
* Regions



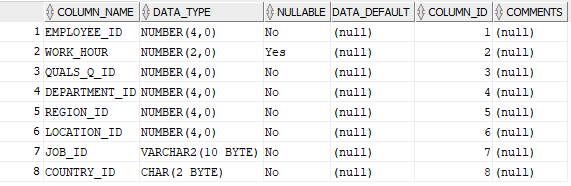
* Employee



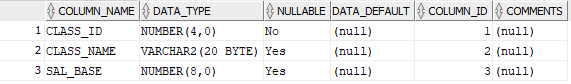
* Full\_timer



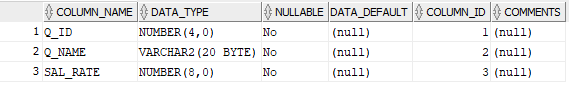
* Part\_timer



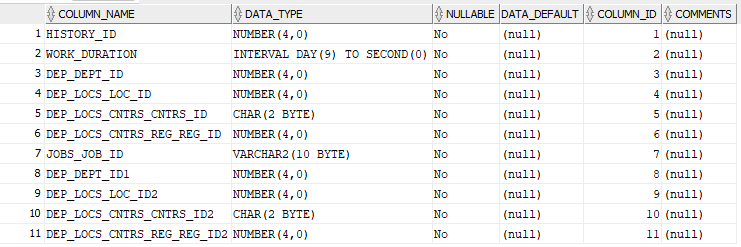
* Classes



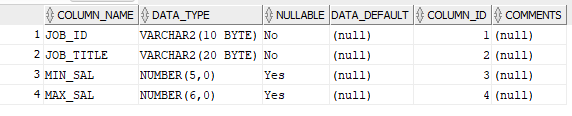
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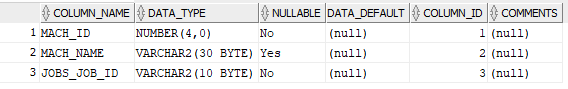
* Job\_history



* Jobs



* Machine



* Logs

