```
%script
DECLARE
  v_mensaje VARCHAR2(100);
BEGIN
  v_mensaje := '¡Hola desde PL/SQL!';
  DBMS_OUTPUT.PUT_LINE(v_mensaje);
END;
```

```
¡Hola desde PL/SQL!


PL/SQL procedure successfully completed.
```

```
%script

 -- 1. Añadir la columna ID
ALTER TABLE HONGOS ADD ID NUMBER;

-- 2. Crear secuencia para ID
CREATE SEQUENCE HONGOS_SEQ START WITH 1 INCREMENT BY 1;

-- 3. Rellenar la columna ID con números secuenciales
UPDATE HONGOS
SET ID = HONGOS_SEQ.NEXTVAL;

-- Confirmar cambios
COMMIT;

-- 4. (Opcional) Crear restricción PRIMARY KEY en ID
ALTER TABLE HONGOS ADD CONSTRAINT PK_HONGOS_ID PRIMARY KEY (ID);
```

```
Table HONGOS altered.


----------------------------

Sequence HONGOS_SEQ created.


----------------------------

8,124 rows updated.


----------------------------

Commit complete.


----------------------------

Table HONGOS altered.


----------------------------
```

```
%script
SELECT *
FROM HONGOS
FETCH FIRST 20 ROWS ONLY;
```

ODOR	BRUISES	CAP_COLOR	CAP_SURFACE	CAP_SHAPE	TARGET	ID
l	t	y	f	f	e	73
a	t	n	y	x	e	74
a	t	y	s	b	e	75
l	t	y	s	f	e	76
l	t	w	s	x	e	77
l	t	n	y	f	e	78
p	t	n	y	x	p	79
a	t	n	y	f	e	80
n	f	n	s	x	e	81
p	t	w	y	x	p	82
n	f	g	f	f	e	83
n	f	g	f	x	e	84
l	t	y	y	x	e	85
n	f	n	s	x	e	86

ODOR	BRUISES	CAP_COLOR	CAP_SURFACE	CAP_SHAPE	TARGET	ID
a	t	w	s	b	e	87
l	t	w	s	x	e	88
l	t	n	y	f	e	89
n	f	n	f	s	e	90
n	f	n	f	x	e	91
l	t	w	s	b	e	92

20 rows selected.

```
%script

SELECT * FROM HONGOS
ORDER BY ID
FETCH FIRST 10 ROWS ONLY;
```

ODOR	BRUISES	CAP_COLOR	CAP_SURFACE	CAP_SHAPE	TARGET	ID
p	t	n	s	x	p	1
a	t	y	s	x	e	2
l	t	w	s	b	e	3
p	t	w	y	x	p	4
n	f	g	s	x	e	5
a	t	y	y	x	e	6
a	t	w	s	b	e	7
l	t	w	y	b	e	8
p	t	w	y	x	p	9
a	t	y	s	b	e	10

10 rows selected.

```
%script
SELECT
  TARGET,
  COUNT(*) AS TOTAL,
  ROUND(100.0 * COUNT(*) / SUM(COUNT(*)) OVER (), 2) AS PORCENTAJE
FROM HONGOS
GROUP BY TARGET
ORDER BY TOTAL DESC;
```

TARGET	TOTAL	PORCENTAJE
e	4208	51.8
p	3916	48.2

```
%script

-- Eliminar las tablas mal generadas
--DROP TABLE HONGOS_TRAIN;
--DROP TABLE HONGOS_TEST;

-- Paso 1: Crear tabla intermedia con valor aleatorio fijo
CREATE TABLE HONGOS_RANDOM AS
SELECT H.*, DBMS_RANDOM.VALUE AS rnd
FROM HONGOS H;

-- Paso 2: Crear tabla de entrenamiento (80%)
CREATE TABLE HONGOS_TRAIN AS
SELECT * FROM HONGOS_RANDOM
WHERE rnd < 0.8;

-- Paso 3: Crear tabla de prueba (20%)
CREATE TABLE HONGOS_TEST AS
SELECT * FROM HONGOS_RANDOM
WHERE rnd >= 0.8;
```

```
Table HONGOS_RANDOM created.


---------------------------

Table HONGOS_TRAIN created.


---------------------------

Table HONGOS_TEST created.


---------------------------
```

```
%script

SELECT COUNT(*) AS total_filas FROM HONGOS_TEST;
SELECT COUNT(*) AS total_filas FROM HONGOS_TRAIN;
```

```
TOTAL_FILAS
          1611


---------------------------

TOTAL_FILAS
          6513


---------------------------
```

```
%script

SELECT ID -- o la PK que uses
FROM HONGOS_TRAIN
INTERSECT
SELECT ID
FROM HONGOS_TEST;
```

```
no rows selected

---------------------------
```

```
%script

 /*
Creamos los hiperparametros en la tabla nn_settings
*/
BEGIN
  DELETE FROM NN_SETTINGS;

  INSERT INTO NN_SETTINGS VALUES ('ALGO_NAME', 'ALGO_NEURAL_NETWORK');
  INSERT INTO NN_SETTINGS VALUES ('NNET_HIDDEN_LAYERS', '2');
  INSERT INTO NN_SETTINGS VALUES ('NNET_ACTIVATIONS', 'NNET_ACTIVATIONS_LOG_SIG');
  INSERT INTO NN_SETTINGS VALUES ('NNET_TOLERANCE', '0.000001');
  INSERT INTO NN_SETTINGS VALUES ('PREP_AUTO', 'ON');
  INSERT INTO NN_SETTINGS VALUES ('CLAS_WEIGHTS_BALANCED', 'OFF');
  INSERT INTO NN_SETTINGS VALUES ('ODMS_RANDOM_SEED', '0');
  INSERT INTO NN_SETTINGS VALUES ('ODMS_DETAILS', 'ODMS_ENABLE');
  INSERT INTO NN_SETTINGS VALUES ('ODMS_MISSING_VALUE_TREATMENT', 'ODMS_MISSING_VALUE_AUT
  INSERT INTO NN_SETTINGS VALUES ('ODMS_SAMPLING', 'ODMS_SAMPLING_DISABLE');
END;
/
```

```
PL/SQL procedure successfully completed.


--------------------------
```

```
%script

/*
SETTING_NAME    Descripción breve
ALGO_NAME   Especifica el algoritmo: aquí es una red neuronal (ALGO_NEURAL_NETWORK).
NNET_HIDDEN_LAYERS  Número de capas ocultas en la red. Más capas pueden capturar patrones
NNET_ACTIVATIONS    Función de activación usada (aquí LOG_SIG, una sigmoide logarítmica).
NNET_TOLERANCE  Umbral de convergencia. Si el cambio en el error es menor que este valor,
ODMS_RANDOM_SEED    Fija la semilla aleatoria para reproducibilidad.
PREP_AUTO   Activa el preprocesamiento automático (normalización, codificación, etc.).
CLAS_WEIGHTS_BALANCED   Si está en ON, ajusta pesos para clases desbalanceadas. Aquí está
ODMS_DETAILS    Habilita la salida detallada del modelo (diagnóstico, métricas).
ODMS_MISSING_VALUE_TREATMENT    Manejo automático de valores faltantes.
ODMS_SAMPLING   Controla si se hace muestreo de datos. Aquí está desactivado.
*/

SELECT * FROM NN_SETTINGS;
```

SETTING_NAME	SETTING_VALUE
ALGO_NAME	ALGO_NEURAL_NETWORK
NNET_HIDDEN_LAYERS	2
NNET_ACTIVATIONS	NNET_ACTIVATIONS_LOG_SIG
NNET_TOLERANCE	0.000001
PREP_AUTO	ON
CLAS_WEIGHTS_BALANCED	OFF
ODMS_RANDOM_SEED	0
ODMS_DETAILS	ODMS_ENABLE
ODMS_MISSING_VALUE_TREATMENT	ODMS_MISSING_VALUE_AUTO
ODMS_SAMPLING	ODMS_SAMPLING_DISABLE

10 rows selected.

```
%script

 BEGIN
  -- Borra modelo previo si existe
  BEGIN
    DBMS_DATA_MINING.DROP_MODEL('NN_HONGOS');
  EXCEPTION
    WHEN OTHERS THEN
      NULL;
  END;

  -- Crea el nuevo modelo
  DBMS_DATA_MINING.CREATE_MODEL(
    model_name          => 'NN_HONGOS',
    mining_function     => DBMS_DATA_MINING.CLASSIFICATION,
    data_table_name     => 'HONGOS_TRAIN',
    case_id_column_name => 'ID',
    target_column_name  => 'TARGET',
    settings_table_name => 'NN_SETTINGS'
  );
END;
/
```

```
PL/SQL procedure successfully completed.


---------------------------
```

```
%script

 SELECT ID,
       TARGET,
       PREDICTION(NN_HONGOS USING
       ODOR,
       BRUISES,
       CAP_COLOR,
       CAP_SURFACE,
       CAP_SHAPE

       ) AS PREDICCION
FROM HONGOS_TEST
FETCH FIRST 10 ROWS ONLY;
```

```
ID     TARGET    PREDICCION
    73 e         e
    85 e         e
    86 e         e
    87 e         e
    99 e         e
   102 e         e
   111 e         e
   116 e         e
   126 e         e
   127 e         e

10 rows selected.


---------------------------
```

```
%script

 SELECT
  SUM(CASE WHEN TARGET = 'p' AND PRED = 'p' THEN 1 ELSE 0 END) AS TP,
  SUM(CASE WHEN TARGET = 'e' AND PRED = 'e' THEN 1 ELSE 0 END) AS TN,
  SUM(CASE WHEN TARGET = 'e' AND PRED = 'p' THEN 1 ELSE 0 END) AS FP,
  SUM(CASE WHEN TARGET = 'p' AND PRED = 'e' THEN 1 ELSE 0 END) AS FN
FROM (
  SELECT
    TARGET,
    PREDICTION(NN_HONGOS USING ODOR, BRUISES, CAP_COLOR, CAP_SURFACE, CAP_SHAPE) AS PRED
  FROM HONGOS_TEST
);
```

TP	TN	FP	FN
758	840	7	6

```
%script

 SELECT
  ROUND(2 * TP / (2 * TP + FP + FN), 4) AS F1_SCORE,
  ROUND(TP / (TP + FP), 4) AS PRECISION,
  ROUND(TP / (TP + FN), 4) AS RECALL
FROM (
  SELECT
    SUM(CASE WHEN TARGET = 'p' AND PRED = 'p' THEN 1 ELSE 0 END) AS TP,
    SUM(CASE WHEN TARGET = 'e' AND PRED = 'e' THEN 1 ELSE 0 END) AS TN,
    SUM(CASE WHEN TARGET = 'e' AND PRED = 'p' THEN 1 ELSE 0 END) AS FP,
    SUM(CASE WHEN TARGET = 'p' AND PRED = 'e' THEN 1 ELSE 0 END) AS FN
  FROM (
    SELECT
      TARGET,
      PREDICTION(NN_HONGOS USING ODOR, BRUISES, CAP_COLOR, CAP_SURFACE, CAP_SHAPE) AS PRE
    FROM HONGOS_TEST
  )
);
```

```
F1_SCORE    PRECISION    RECALL
     0.9915       0.9908    0.9921


---------------------------
```

```
%script

 CREATE TABLE micoguia_registros (
    id_registro         NUMBER GENERATED BY DEFAULT AS IDENTITY PRIMARY KEY,
    fecha_registro      DATE DEFAULT SYSDATE,
    usuario             VARCHAR2(100),

    odor                VARCHAR2(50),
    bruises             VARCHAR2(50),
    cap_color           VARCHAR2(50),
    cap_surface         VARCHAR2(50),
    cap_shape           VARCHAR2(50),

    clase_predicha      VARCHAR2(20), -- 'Venenoso', 'Comestible'
    confianza           NUMBER(5,2),  -- porcentaje

    nombre_registro     VARCHAR2(200),
    latitud             VARCHAR2(50),
    longitud            VARCHAR2(50),
    descripcion         VARCHAR2(1000),

    foto                BLOB,
    foto_nombre         VARCHAR2(255),
    foto_mime_type      VARCHAR2(100)
);
```

```
Table MICOGUIA_REGISTROS created.


---------------------------
```

```
%script
```

```
%script

 SELECT *
FROM micoguia_registros
ORDER BY fecha_registro DESC;
```

```
ID_REGISTRO    FECHA_REGISTRO    USUARIO      ODOR    BRUISES    CAP_COLOR    CAP_SURFACE
CAP_SHAPE    CLASE_PREDICHA    CONFIANZA    NOMBRE_REGISTRO      LATITUD       LONGITUD
DESCRIPCION                                                              FOTO
FOTO_NOMBRE                FOTO_MIME_TYPE
            11 08-AUG-25         LALO_ML      n       f          e            y
x            Comestible               88.73 Registro numero 2    40.7128° N    74.0060° W
Hongo llamativo, con distintivo en los puntos blancos, estan en grupo
FFD8FFE000104A4649460001010100600060000FFDB00430008060607060508070707090908 0A0C140D0C0B0B
0C1912130F141D1A1F1E1D1A1C1C20242E2720222C231C1C2837292C30313434341F27    amanitamuscaria
(1).jpg    image/jpeg
            10 08-AUG-25         LALO_ML      n       f          e            y
x            Comestible               88.73 Registro numero 2    40.7128° N    74.0060° W
Hongo llamativo, con distintivo en los puntos blancos, estan en grupo
FFD8FFE000104A4649460001010100600060000FFDB00430008060607060508070707090908 0A0C140D0C0B0B
0C1912130F141D1A1F1E1D1A1C1C20242E2720222C231C1C2837292C30313434341F27
amanitamuscaria.jpg        image/jpeg
            9 08-AUG-25         LALO_ML      n       f          e            y
x            Comestible               88.73 Registro numero 1    40.7128° N    74.0060° W
Hongo llamativo, con distintivo en los puntos blancos, estan en grupo
FFD8FFE000104A4649460001010100600060000FFDB00430008060607060508070707090908 0A0C140D0C0B0B
0C1912130F141D1A1F1E1D1A1C1C20242E2720222C231C1C2837292C30313434341F27    amanitamuscaria
(1).jpg    image/jpeg
            8 08-AUG-25         EVELYN_ML    f                  e            f
b            Venenoso                100
            6 08-AUG-25         LALO_ML      n       f          e            y
x            Comestible               88.73 Registro numero 1    40.7128° N    74.0060° W
            5 08-AUG-25         LALO_ML      m       t          g            s
b            Comestible               99.99
            4 08-AUG-25         LALO_ML      m       t          g            s
f            Comestible              100
            3 08-AUG-25         LALO_ML      m       t          u            s
f            Comestible              100
            2 08-AUG-25         LALO_ML      m       f          u            s
f            Venenoso                100
            1 08-AUG-25         LALO_ML      m       f          u            f
f            Venenoso                100

10 rows selected.


---------------------------
```