

## PL/SQL

- Oracle's procedural language. Used for triggers, stored procedures, etc.

- Overview

```
declare
    <declarations section>
begin
    <executable commands>
    exception
    <exception handling>
end;
```

## PL/SQL Example

```
declare
    cursor item_cursor is select * from ITEMS ;
    item_val item_cursor%ROWTYPE ;
    cnt INTEGER(5) := 0 ;
begin
    open item_cursor ;
    loop
        fetch item_cursor into item_val ;
        exit when item_cursor%NOTFOUND ;
        cnt := cnt + 1 ;
    end loop ;
    close item_cursor ;
    if (cnt > 0)
    then insert into item_count values(cnt) ;
    end if ;
end ;
/
```

## PL/SQL

- Cursor properties
  - %FOUND, %NOTFOUND : a record can/cannot be fetched from the cursor
  - %ISOPEN : the cursor has been opened
  - %ROWCOUNT : the number of rows fetched from the cursor so far
  - %TYPE : the data type of a column:  
lname item\_cursor.name%TYPE
- Conditional logic

```
if <some condition>
  then <some command>
elsif <some condition>
  then <some command>
else <some command>
end if ;
```

## PL/SQL – Loops

- For loop:

```
for item_val in item_cursor
loop
end loop ;
```

//note no need for open/fetch/close cursor commands in this case.
- While loop:

```
while cnt < 5
loop
end loop ;
```

## PL/SQL – exceptions

- Exceptions arise when a statement causes an error.
- Examples:

```

ACCESS_INTO_NULL
CURSOR_ALREADY_OPEN
DUP_VAL_ON_INDEX
INVALID_CURSOR
LOGIN_DENIED
NO_DATA_FOUND
NOT_LOGGED_ON
TOO_MANY_ROWS - select into stmt returns more
                  than one row

VALUE_ERROR
ZERO_DIVIDE

```

## PL/SQL

```

declare
  cursor item_cursor is select I.iid, I.oid, count(B.bid) bidcnt
                        from items I, bids B where I.iid = B.iid
                        group by I.iid, I.oid ;
  item_val item_cursor%ROWTYPE ;
begin
  update owners set status = 'B' ;
  for item_val in item_cursor
  loop
    if (item_val.bidcnt > 2)
    then update owners set status = 'G'
          where oid = item_val.oid;
    end if;
  end loop ;
end ;
/

```