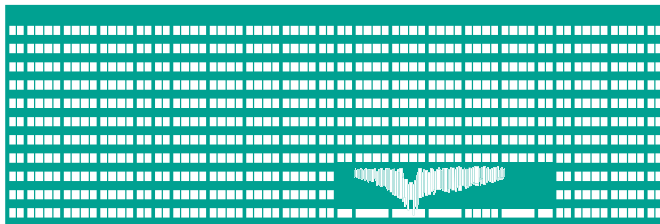


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# Database and Information Systems

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2019/2020



*Note:* unless noted otherwise, all tasks are for the table `Student`:

```
CREATE TABLE Student (  
  login      CHAR(6) PRIMARY KEY,  
  fname      VARCHAR(30) NOT NULL,  
  lname      VARCHAR(50) NOT NULL,  
  email      VARCHAR(50) NOT NULL);
```



- 1 Add attribute `tallness` of the type `Int`.
- 2 Modify integrity rule for attribute `email` to be `NULL` <sup>1</sup>
- 3 Run anonymous procedure:

```
BEGIN
  INSERT INTO Student
    (login, fname, lname, tallness)
  VALUES ('smi05', 'John', 'Smith', 175);
END;
```

---

<sup>1</sup>ALTER TABLE MODIFY, viz: <https://docs.oracle.com/en/database/oracle/oracle-database/18/sqlrf/ALTER-TABLE.html>



Oracle SQL Developer has sometimes atypical behaviour (comparing with SQL\*Plus).

- **SERVEROUTPUT:**

SET SERVEROUTPUT ON/OFF works, but it is granted/denied output into window Script Output.

To show output in the window Dbms Output, need to allow window in menu View/ Dbms Output and then click on the button with the green plus.



- AUTOCOMMIT: As a result of SET AUTOCOMMIT ON/OFF get SQLPLUS Command Skipped.

AUTOCOMMIT should be configured in menu Tools/Preferences and allow Database/Worksheet a Autocommit in SQL Worksheet to SET AUTOCOMMIT ON.

In the editor will appear commands ROLLBACK/COMMIT and icons and buttons ROLLBACK (F12)/COMMIT (F11) then.

This functionality depends on the version of Oracle SQL Developer.



In all cases use `DBMS_OUTPUT.PUT_LINE` to print variables <sup>2</sup>.

- 1 Modify procedure, that values will be stored in local variables with same data types as columns in table `Student`.
- 2 Modify procedure, that variables will be declared using `%TYPE`.
- 3 Create anonymous procedure, which will select student with login 'smi05' and store the record in one local variable (use `%ROWTYPE`).

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<sup>2</sup>Do not forget `SET SERVEROUTPUT ON`



- 1 Create anonymous procedure, which will insert two records into table `Student` and invoke `COMMIT`. In case of error will invoke `ROLLBACK`.
- 2 Try to `SET AUTOCOMMIT ON/OFF` and study system behaviour with different `AUTOCOMMIT` options.