



**ALTIR**

**AIRCRAFT MAINTENANCE PLANNING APPLICATION**

v1.2.8

**INSTALLATION GUIDE**

Moscow  
2019

## Content

1. Terms and abbreviations .....	3
2. Scope .....	3
3. System requirements .....	4
4. Before installation .....	4
5. General information about installation.....	6
6. Database connection settings .....	7
6. Annex №1. SQL queries for creating tables in SQLite DB. ....	9
7. Annex №2. SQL queries for creating tables in MySQL DB. ....	14
8. Annex №3. SQL queries for creating tables in PostgreSQL DB.....	20
9. Annex №4. SQL queries for creating tables in Firebird DB.....	26

## **1. Terms and abbreviations**

ROM – permanent storage device.

RAM – random access memory.

OS – operating system.

DB – database.

DBMS – database management system.

## **2. Scope**

This guide is intended for ALTIR administrators. Guide provides information about:

- preparation for installation and for using of application,
- installation of application,
- setting up a connection to non-default database,
- creating tables and indexes in a non-default database,
- launch of application.

### 3. System requirements

- Screen resolution of at least 1024\*768 pixels.
- Windows, Linux or MacOS X operating system.
- Installed Java virtual machine with support of Java SE 8 (recommend Oracle JRE 8 or later).
- Free space in ROM: 500 Mb or more.
- Free space in RAM: 1 Gb or more.

### 4. Before installation

Before installing ALTIR it is recommended to perform the following operations if necessary:

- 1) Install Java Virtual Machine (as part of JRE) with support of Java SE 8.

For Windows and MacOS X:

JRE downloading page: <https://java.com/download/>

For Linux (Ubuntu):

To install JRE run command in terminal:

```
sudo apt install openjdk-8-jre
```

- 2) Install fonts.

For Windows and MacOS X: not required.

For Linux (Ubuntu):

Install one of Segoe UI, Arial, Noto Sans or Tahoma fonts.

To install fonts run commands in terminal:

**Installation of Arial fonts:**

```
sudo apt-get install ttf-mscorefonts-installer
```

**Installation of Tahoma fonts:**

```
wget
```

```
https://gist.githubusercontent.com/maxwelleite/913b6775e4e408daa904566eb375b090/raw/cbfd8eb70184fa509fcab37dad7905676c93d587/ttf-ms-tahoma-installer.sh -q -O - | sudo bash
```

### Installation of Segoe UI fonts:

```
sudo mkdir -p /usr/share/fonts/truetype/msttcorefonts/  
cd /usr/share/fonts/truetype/msttcorefonts/  
sudo wget -q  
https://github.com/martinring/clide/blob/master/doc/fonts/segoeui.ttf?raw=true -O segoeui.ttf # regular  
sudo wget -q  
https://github.com/martinring/clide/blob/master/doc/fonts/segoeuib.ttf?raw=true -O segoeuib.ttf # bold  
sudo wget -q  
https://github.com/martinring/clide/blob/master/doc/fonts/segoeuib.ttf?raw=true -O segoeuii.ttf # italic  
sudo wget -q  
https://github.com/martinring/clide/blob/master/doc/fonts/segoeuiiz.ttf?raw=true -O segoeuiiz.ttf # bold italic  
sudo wget -q  
https://github.com/martinring/clide/blob/master/doc/fonts/segoeuil.ttf?raw=true -O segoeuil.ttf # light  
sudo wget -q  
https://github.com/martinring/clide/blob/master/doc/fonts/seguili.ttf?raw=true -O seguili.ttf # light italic  
sudo wget -q  
https://github.com/martinring/clide/blob/master/doc/fonts/segoeuisl.ttf?raw=true -O segoeuisl.ttf # semilight  
sudo wget -q  
https://github.com/martinring/clide/blob/master/doc/fonts/seguisli.ttf?raw=true -O seguisli.ttf # semilight italic  
sudo wget -q  
https://github.com/martinring/clide/blob/master/doc/fonts/seguisb.ttf?raw=true -O seguisb.ttf # semibold  
sudo wget -q  
https://github.com/martinring/clide/blob/master/doc/fonts/seguisbi.ttf?raw=true -O seguisbi.ttf # semibold italic  
fc-cache -f /usr/share/fonts/truetype/msttcorefonts/
```

### 3) Install DBMS, create and configure a database instance for non- default database. Create DB tables and indexes for ALTIR.

ALTIR supports SQLite (v3), MySQL (v5.6), PostgreSQL (v9.6) and Firebird (v3.0) databases.

Installation of DBMS, creation and configuration of database instance should be performed according to guides for those applications.

We recommend the following graphical interfaces for DBMS:

DBMS	GUI application	
SQLite	SQLiteDatabaseBrowser	DBeaver
MySQL	phpMyAdmin	
PostgreSQL	Adminer	
Firebird	-	

SQL queries for creating database tables and indexes are given in Annexes № 1,2,3,4.

## 5. General information about installation

ALTIR distributes in compressed file that contains a set of files required for the functioning of the application:

- executable file  
(ALTIR\_\*.exe for Windows,  
ALTIR\_\*.jar for Linux,  
ALTIR\_\*.app for MacOS X);
- default database file (altir.sqlite3).

Application launch:

- 1) unpack compressed file into the folder (local folder, folder on a mapped network drive, or a network folder with shared access);
- 2) set read and write permissions for that folder (administrator privileges is not required);
- 3) to use non-default database you should create Altir\_db\_settings.ini file in the same folder and edit it according to instruction (see par. 6);
- 4) run (execute) the executable file.

ALTIR contains following built-in user accounts (account data is stored at database):

- Administrator account  
Login: admin  
Password: admin
- Guest account  
Login: guest  
Password: guest

## 6. Database connection settings

ALTIR uses `altir.sqlite3` file in application folder as the default database.

To change database connection settings you should place (create) text configuration file in UTF-8 encoding named `Altir_db_settings.ini` in folder of executable file of application. This file must contain description of at least one connection according to following pattern:

```
[connection title]
type = database type
link = database address
name = database name
schema = database schema
login = login
password = password
```

where:

*connection title* – an arbitrary string that will identify the connection in application interface;

*database type* – one of strings: MYSQL, POSTGRESQL, SQLITE, FIREBIRD, matched to the type of DBMS;

*database address* – 1) DBMS host's network address and port number in the form `//host:port/` (for MySQL, PostgreSQL, Firebird) or 2) absolute or relative address of the database file in file system (for SQLite);

*database name* – database name in DBMS (if necessary);

*database schema* – name of database schema in DBMS (if necessary);

*login* – name of DBMS user who has read and write access to specified database (if necessary);

*password* – password of specified user (if necessary);

**Example:**

```
[first database (mysql)]  
type = MYSQL  
link = //server1.local:3306/  
name = altir_db  
login = admin  
password = adminpassword
```

or

```
[second database (postgresql)]  
type = POSTGRESQL  
link = //server2.local:5432/  
name = altir_db_reserv_1  
schema = public  
login = admin  
password = adminpassword
```

or

```
[third database (firebird)]  
type = FIREBIRD  
link = //server3.local:3050/  
name = altir_db_reserv_2  
login = admin  
password = adminpassword
```

If file contains description of several connections, the application will prompt the user to select connection to be used.

Following description corresponds to default database:

```
[Default SQLite DB]  
type = SQLITE  
link = ./altir.sqlite3
```



## 6. Annex №1. SQL queries for creating tables in SQLite DB.

```

CREATE TABLE `service_info`
(
    `uid`                                INTEGER NOT NULL UNIQUE
    , `schema_version`                   TEXT
    , `enterprise_name`                  TEXT
    , `application_site`                 TEXT
    , `support_site`                     TEXT
    , `support_email`                    TEXT
    , `support_tel`                      TEXT
    , `active_readings`                  INTEGER NOT NULL DEFAULT 0
);
INSERT INTO `service_info` VALUES
(1,"1.0","developers","http://altir.info/","http://altir.info/support/","info@altir.info","","0");

CREATE TABLE `aircrafts`
(
    `r_number`                           TEXT NOT NULL UNIQUE
    , `type`                              TEXT
    , `s_number`                           TEXT
    , `production_date`                   DATE
    , `acceptance_date`                   DATE NOT NULL
    , `base_flight_time_cycles`           INTEGER
    , `base_flight_time_hours`            INTEGER
    , `base_flight_time_minutes`          INTEGER
    , `overhaul_flight_time_cycles`       TEXT
    , `overhaul_flight_time_hours`        TEXT
    , `overhaul_flight_time_minutes`      TEXT
    , `overhaul_date`                     TEXT
    , `overhaul_remark`                   TEXT
    , `archived`                           BOOLEAN NOT NULL
    , `archiving_date`                     DATE
);

CREATE TABLE `engines`
(
    `uid`                                INTEGER NOT NULL
    , `ac_r_number`                       TEXT NOT NULL
    , `s_number`                           TEXT NOT NULL
    , `kind`                               INTEGER NOT NULL
    , `index`                              INTEGER NOT NULL
    , `type`                              TEXT
    , `b_number`                           TEXT
    , `production_date`                   DATE
    , `installation_date`                 DATE
    , `base_flight_time_cycles`           INTEGER
    , `base_flight_time_hours`            INTEGER
    , `base_flight_time_minutes`          INTEGER
    , `overhaul_flight_time_cycles`       TEXT
    , `overhaul_flight_time_hours`        TEXT
    , `overhaul_flight_time_minutes`      TEXT
    , `overhaul_date`                     TEXT
    , `overhaul_remark`                   TEXT
    , `archived`                           BOOLEAN NOT NULL
    , `archiving_date`                     DATE
    , `archived_flight_time_cycles`       INTEGER
    , `archived_flight_time_hours`        INTEGER
    , `archived_flight_time_minutes`      INTEGER
    , PRIMARY KEY(`uid`)
);

```

## ALTIR, v1.2.8. Installation guide.

```
CREATE TABLE `reports`
```

```
(
    `uid` INTEGER NOT NULL
  , `ac_r_number` TEXT NOT NULL
  , `_IND` INTEGER
  , `index` INTEGER
  , `to_form` TEXT
  , `to_description` TEXT
  , `performance_date` TEXT
  , `flight_time_on_performance_cycles` INTEGER
  , `flight_time_on_performance_hours` INTEGER
  , `card_number` TEXT
  , `filling_color` TEXT
  , `font_color` TEXT
  , PRIMARY KEY(`uid`)
);
```

```
CREATE TABLE `nars`
```

```
(
    `uid` INTEGER NOT NULL
  , `ac_r_number` TEXT NOT NULL
  , `_IND` INTEGER
  , `date` DATE
  , `flight_number` TEXT
  , `flight_direction` TEXT
  , `page` TEXT
  , `cycles_per_flight` INTEGER
  , `takeoff_time_hours` INTEGER
  , `takeoff_time_minutes` INTEGER
  , `landing_time_hours` INTEGER
  , `landing_time_minutes` INTEGER
  , `user_id` INTEGER
  , `aircraft_flight_time_specified_cycles` INTEGER
  , `aircraft_flight_time_specified_hours` INTEGER
  , `aircraft_flight_time_specified_minutes` INTEGER
  , `engines_flight_time_specified_cycles` TEXT
  , `engines_flight_time_specified_hours` TEXT
  , `engines_flight_time_specified_minutes` TEXT
  , `filling_color` TEXT
  , `font_color` TEXT
  , PRIMARY KEY(`uid`)
);
```

```
CREATE TABLE `components`
```

```
(
    `uid` INTEGER NOT NULL
  , `ac_r_number` TEXT NOT NULL
  , `_IND` INTEGER NOT NULL
  , `name` TEXT
  , `p_number` TEXT
  , `s_number` TEXT
  , `ata` INTEGER
  , `production_date` DATE
  , `installation_date` DATE
  , `sertificate` TEXT
  , `type` INTEGER
  , `nar_source` INTEGER
  , `nar_source_flight_time_cycles` INTEGER
  , `nar_source_flight_time_hours` INTEGER
  , `frozing_date` DATE
  , `frozen_flight_time_cycles` INTEGER
  , `frozen_flight_time_hours` INTEGER
  , `frozen_flight_time_from_overhaul_cycles` INTEGER
  , `frozen_flight_time_from_overhaul_hours` INTEGER
);
```

ALTIR, v1.2.8. Installation guide.

```

, `remark` TEXT
, `status` INTEGER
, `base_flight_time_cycles` INTEGER
, `base_flight_time_hours` INTEGER
, `base_flight_time_from_overhaul_cycles` INTEGER
, `base_flight_time_from_overhaul_hours` INTEGER
, `sub_index` INTEGER NOT NULL
, `pto_task` TEXT
, `counting_date` DATE
, `counting_time_cycles` INTEGER
, `counting_time_hours` INTEGER
, `life_time_days` INTEGER
, `life_time_cycles` INTEGER
, `life_time_hours` INTEGER
, `before_transposition_nar_source_flight_time_cycles` TEXT
, `before_transposition_nar_source_flight_time_hours` TEXT
, `after_transposition_nar_source_flight_time_cycles` TEXT
, `after_transposition_nar_source_flight_time_hours` TEXT
, `transposition_count` INTEGER
, `transposition_aircrafts` TEXT
, `frozen` BOOLEAN NOT NULL
, `vacant` BOOLEAN NOT NULL
, `filling_color` TEXT
, `font_color` TEXT
, `archived` BOOLEAN NOT NULL
, `archiving_date` DATE
, `archived_flight_time_cycles` TEXT
, `archived_flight_time_hours` TEXT
, `archived_flight_time_from_overhaul_cycles` TEXT
, `archived_flight_time_from_overhaul_hours` TEXT
, `restored_flight_time_cycles` TEXT
, `restored_flight_time_hours` TEXT
, `restored_flight_time_from_overhaul_cycles` TEXT
, `restored_flight_time_from_overhaul_hours` TEXT
, `history_p_number` TEXT
, `history_s_number` TEXT
, PRIMARY KEY(`uid`)
);

```

```

CREATE TABLE `forms`
(
  `uid` INTEGER NOT NULL
, `ac_r_number` TEXT NOT NULL
, `kind` TEXT
, `nar_source_flight_time_cycles` INTEGER
, `nar_source_flight_time_hours` INTEGER
, `counting_date` DATE
, `counting_time_cycles` INTEGER
, `counting_time_hours` INTEGER
, `interval_cycles` INTEGER
, `interval_days` INTEGER
, `interval_hours` INTEGER
, `performance_remaining_date_specified` DATE
, `mjss` TEXT
, `performance_date` DATE
, `remark` TEXT
, `filling_color` TEXT
, `font_color` TEXT
, `archived` BOOLEAN NOT NULL
, `archiving_date` DATE
, `archived_flight_time_cycles` INTEGER
, `archived_flight_time_hours` INTEGER
, PRIMARY KEY(`uid`)
);

```

## ALTIR, v1.2.8. Installation guide.

```
CREATE TABLE `tasks`
(
    `uid` INTEGER NOT NULL
    , `ac_r_number` TEXT NOT NULL
    , `number` TEXT
    , `description` TEXT
    , `ata` INTEGER
    , `type` INTEGER
    , `kind` TEXT
    , `creation_date` DATE
    , `nar_source` INTEGER
    , `nar_source_flight_time_cycles` INTEGER
    , `nar_source_flight_time_hours` INTEGER
    , `counting_date` DATE
    , `counting_time_cycles` INTEGER
    , `counting_time_hours` INTEGER
    , `interval_cycles` INTEGER
    , `interval_days` INTEGER
    , `interval_hours` INTEGER
    , `performance_remaining_date_specified` DATE
    , `mjss` TEXT
    , `performance_date` DATE
    , `remark` TEXT
    , `filling_color` TEXT
    , `font_color` TEXT
    , `archived` BOOLEAN NOT NULL
    , `archiving_date` DATE
    , `archived_flight_time_cycles` INTEGER
    , `archived_flight_time_hours` INTEGER
    , PRIMARY KEY(`uid`)
);
```

```
CREATE TABLE `wheel_repairings`
(
    `uid` INTEGER NOT NULL
    , `ac_r_number` TEXT NOT NULL
    , `_IND` INTEGER
    , `p_number` TEXT
    , `s_number` TEXT
    , `type` INTEGER
    , `pre_overhaul_repairings_count` INTEGER
    , `repairing_type` INTEGER
    , `installation_date` DATE
    , `removing_date` DATE
    , `flight_time_cycles` INTEGER
    , `flight_time_hours` INTEGER
    , `flight_time_from_overhaul_cycles` INTEGER
    , `flight_time_from_overhaul_hours` INTEGER
    , `remark` TEXT
    , PRIMARY KEY(`uid`)
);
```

```
CREATE TABLE `history_events`
(
    `date` TIMESTAMP NOT NULL
    , `user_name` TEXT NOT NULL
    , `ac_r_number` TEXT NOT NULL
    , `ac_archived` BOOLEAN NOT NULL
    , `object_type` TEXT NOT NULL
    , `area` TEXT NOT NULL
    , `object_uid` INTEGER
    , `object_description` TEXT NOT NULL
    , `action_type` TEXT NOT NULL
);
```

## ALTIR, v1.2.8. Installation guide.

```
        , `data_before`      TEXT NOT NULL
        , `data_after`      TEXT NOT NULL
);
```

```
CREATE TABLE `save_actions`
(
    `index`                INTEGER NOT NULL
    , `ac_r_numbers`      TEXT
    , `timestamp`        TIMESTAMP DEFAULT CURRENT_TIMESTAMP
    , `user`              INTEGER
    , `created_reports`   TEXT
    , `changed_reports`   TEXT
    , `deleted_reports`   TEXT
    , `created_nars`      TEXT
    , `changed_nars`      TEXT
    , `deleted_nars`      TEXT
    , `created_components` TEXT
    , `changed_components` TEXT
    , `deleted_components` TEXT
    , `created_forms`     TEXT
    , `changed_forms`     TEXT
    , `deleted_forms`     TEXT
    , `created_tasks`     TEXT
    , `changed_tasks`     TEXT
    , `deleted_tasks`     TEXT
    , `created_wheel_repairings` TEXT
    , `changed_wheel_repairings` TEXT
    , `deleted_wheel_repairings` TEXT
    , PRIMARY KEY(`index`)
);
```

```
CREATE TABLE `save_sequence`
(
    `index`                INTEGER NOT NULL
    , `saver`              TEXT NOT NULL
    , `from_time`          TIMESTAMP
    , `save_time`          TIMESTAMP DEFAULT CURRENT_TIMESTAMP
    , `saving`             BOOLEAN
    , `saved`              BOOLEAN
    , PRIMARY KEY(`index`)
);
```

```
CREATE TABLE `users`
(
    `uid`                  INTEGER NOT NULL
    , `login`              TEXT NOT NULL
    , `password`           TEXT
    , `name`               TEXT
    , `role`               INTEGER NOT NULL DEFAULT '2'
    , `archived`           BOOLEAN NOT NULL DEFAULT '0'
);
```

```
INSERT INTO `users` VALUES
(0,"admin","0793d5d4dc589987694b3e272c0ebec0","Administrator",0,0);
INSERT INTO `users` VALUES
(99,"guest","239cbf58bc244fdd3b33a053423f7611","Guest",2,0);
```

```
CREATE INDEX `reports_IND_asc` ON `reports` (`_IND` ASC);
CREATE INDEX `nars_IND_asc` ON `nars` (`_IND` ASC);
CREATE INDEX `components_IND_asc_subindex_asc` ON `components` (`_IND`
ASC, `sub_index` ASC);
CREATE INDEX `forms_kind_asc` ON `forms` (`kind` ASC);
CREATE INDEX `tasks_kind_asc_ata_asc_number_asc` ON `tasks` (`number`
ASC, `ata` ASC, `kind` ASC);
CREATE INDEX `wheel_repairings_IND_asc` ON `wheel_repairings` (`_IND` ASC);
```

## 7. Annex №2. SQL queries for creating tables in MySQL DB.

```

CREATE TABLE `service_info`
(
    `uid`                                INTEGER NOT NULL
    , `schema_version`                   TEXT
    , `enterprise_name`                   TEXT
    , `application_site`                  TEXT
    , `support_site`                      TEXT
    , `support_email`                     TEXT
    , `support_tel`                       TEXT
    , `active_readings`                   INTEGER NOT NULL DEFAULT 0
    , UNIQUE (`uid`)
);
INSERT INTO `service_info` VALUES
(1,"1.0","developers","http://altir.info/","http://altir.info/support/","info@altir.info","","0");

CREATE TABLE `aircrafts`
(
    `r_number`                           TEXT NOT NULL
    , `type`                               TEXT
    , `s_number`                           TEXT
    , `production_date`                   DATE
    , `acceptance_date`                   DATE NOT NULL
    , `base_flight_time_cycles`           INTEGER
    , `base_flight_time_hours`            INTEGER
    , `base_flight_time_minutes`          INTEGER
    , `overhaul_flight_time_cycles`       TEXT
    , `overhaul_flight_time_hours`        TEXT
    , `overhaul_flight_time_minutes`      TEXT
    , `overhaul_date`                     TEXT
    , `overhaul_remark`                   TEXT
    , `archived`                           BOOLEAN NOT NULL
    , `archiving_date`                    DATE
    , UNIQUE (`r_number` (32))
);

CREATE TABLE `engines`
(
    `uid`                                INTEGER NOT NULL AUTO_INCREMENT
    , `ac_r_number`                        TEXT NOT NULL
    , `s_number`                           TEXT NOT NULL
    , `kind`                                INTEGER NOT NULL
    , `index`                               INTEGER NOT NULL
    , `type`                               TEXT
    , `b_number`                           TEXT
    , `production_date`                     DATE
    , `installation_date`                   DATE
    , `base_flight_time_cycles`             INTEGER
    , `base_flight_time_hours`              INTEGER
    , `base_flight_time_minutes`            INTEGER
    , `overhaul_flight_time_cycles`         TEXT
    , `overhaul_flight_time_hours`          TEXT
    , `overhaul_flight_time_minutes`        TEXT
    , `overhaul_date`                       TEXT
    , `overhaul_remark`                     TEXT
    , `archived`                            BOOLEAN NOT NULL
    , `archiving_date`                       DATE
    , `archived_flight_time_cycles`         INTEGER
    , `archived_flight_time_hours`          INTEGER
    , `archived_flight_time_minutes`        INTEGER
    , PRIMARY KEY(`uid`)
);

```

## ALTIR, v1.2.8. Installation guide.

);

```
CREATE TABLE `reports`
(
    `uid` INTEGER NOT NULL AUTO_INCREMENT
    , `ac_r_number` TEXT NOT NULL
    , `_IND` INTEGER
    , `index` INTEGER
    , `to_form` TEXT
    , `to_description` TEXT
    , `performance_date` TEXT
    , `flight_time_on_performance_cycles` INTEGER
    , `flight_time_on_performance_hours` INTEGER
    , `card_number` TEXT
    , `filling_color` TEXT
    , `font_color` TEXT
    , PRIMARY KEY(`uid`)
);
```

```
CREATE TABLE `nars`
(
    `uid` INTEGER NOT NULL
    AUTO_INCREMENT
    , `ac_r_number` TEXT NOT NULL
    , `_IND` INTEGER
    , `date` DATE
    , `flight_number` TEXT
    , `flight_direction` TEXT
    , `page` TEXT
    , `cycles_per_flight` INTEGER
    , `takeoff_time_hours` INTEGER
    , `takeoff_time_minutes` INTEGER
    , `landing_time_hours` INTEGER
    , `landing_time_minutes` INTEGER
    , `user_id` INTEGER
    , `aircraft_flight_time_specified_cycles` INTEGER
    , `aircraft_flight_time_specified_hours` INTEGER
    , `aircraft_flight_time_specified_minutes` INTEGER
    , `engines_flight_time_specified_cycles` TEXT
    , `engines_flight_time_specified_hours` TEXT
    , `engines_flight_time_specified_minutes` TEXT
    , `filling_color` TEXT
    , `font_color` TEXT
    , PRIMARY KEY(`uid`)
);
```

```
CREATE TABLE `components`
(
    `uid` INTEGER NOT NULL
    AUTO_INCREMENT
    , `ac_r_number` TEXT NOT NULL
    , `_IND` INTEGER NOT NULL
    , `name` TEXT
    , `p_number` TEXT
    , `s_number` TEXT
    , `ata` INTEGER
    , `production_date` DATE
    , `installation_date` DATE
    , `sertificate` TEXT
    , `type` INTEGER
    , `nar_source` INTEGER
    , `nar_source_flight_time_cycles` INTEGER
    , `nar_source_flight_time_hours` INTEGER
    , `frozing_date` DATE
);
```

## ALTIR, v1.2.8. Installation guide.

```

, `frozen_flight_time_cycles`          INTEGER
, `frozen_flight_time_hours`          INTEGER
, `frozen_flight_time_from_overhaul_cycles`  INTEGER
, `frozen_flight_time_from_overhaul_hours`  INTEGER
, `remark`                              TEXT
, `status`                               INTEGER
, `base_flight_time_cycles`            INTEGER
, `base_flight_time_hours`            INTEGER
, `base_flight_time_from_overhaul_cycles`  INTEGER
, `base_flight_time_from_overhaul_hours`  INTEGER
, `sub_index`                          INTEGER NOT NULL
, `pto_task`                            TEXT
, `counting_date`                      DATE
, `counting_time_cycles`              INTEGER
, `counting_time_hours`               INTEGER
, `life_time_days`                    INTEGER
, `life_time_cycles`                  INTEGER
, `life_time_hours`                   INTEGER
, `before_transposition_nar_source_flight_time_cycles` TEXT
, `before_transposition_nar_source_flight_time_hours` TEXT
, `after_transposition_nar_source_flight_time_cycles` TEXT
, `after_transposition_nar_source_flight_time_hours` TEXT
, `transposition_count`                INTEGER
, `transposition_aircrafts`           TEXT
, `frozen`                             BOOLEAN NOT NULL
, `vacant`                             BOOLEAN NOT NULL
, `filling_color`                     TEXT
, `font_color`                        TEXT
, `archived`                          BOOLEAN NOT NULL
, `archiving_date`                   DATE
, `archived_flight_time_cycles`       TEXT
, `archived_flight_time_hours`       TEXT
, `archived_flight_time_from_overhaul_cycles` TEXT
, `archived_flight_time_from_overhaul_hours` TEXT
, `restored_flight_time_cycles`       TEXT
, `restored_flight_time_hours`       TEXT
, `restored_flight_time_from_overhaul_cycles` TEXT
, `restored_flight_time_from_overhaul_hours` TEXT
, `history_p_number`                  TEXT
, `history_s_number`                  TEXT
, PRIMARY KEY(`uid`)
);

```

```

CREATE TABLE `forms`
(
  `uid`          INTEGER NOT NULL AUTO_INCREMENT
, `ac_r_number` TEXT NOT NULL
, `kind`        TEXT
, `nar_source_flight_time_cycles`  INTEGER
, `nar_source_flight_time_hours`  INTEGER
, `counting_date`                DATE
, `counting_time_cycles`          INTEGER
, `counting_time_hours`           INTEGER
, `interval_cycles`              INTEGER
, `interval_days`                INTEGER
, `interval_hours`               INTEGER
, `performance_remaining_date_specified` DATE
, `mjss`                        TEXT
, `performance_date`             DATE
, `remark`                       TEXT
, `filling_color`                TEXT
, `font_color`                   TEXT
, `archived`                     BOOLEAN NOT NULL
, `archiving_date`              DATE

```



## ALTIR, v1.2.8. Installation guide.

```
, `archived_flight_time_cycles`          INTEGER
, `archived_flight_time_hours`          INTEGER
, PRIMARY KEY(`uid`)
);

CREATE TABLE `tasks`
(
    `uid`                                INTEGER NOT NULL AUTO_INCREMENT
, `ac_r_number`                          TEXT NOT NULL
, `number`                                TEXT
, `description`                           TEXT
, `ata`                                    INTEGER
, `type`                                    INTEGER
, `kind`                                    TEXT
, `creation_date`                          DATE
, `nar_source`                             INTEGER
, `nar_source_flight_time_cycles`          INTEGER
, `nar_source_flight_time_hours`          INTEGER
, `counting_date`                           DATE
, `counting_time_cycles`                    INTEGER
, `counting_time_hours`                     INTEGER
, `interval_cycles`                         INTEGER
, `interval_days`                           INTEGER
, `interval_hours`                           INTEGER
, `performance_remaining_date_specified`    DATE
, `mjss`                                    TEXT
, `performance_date`                         DATE
, `remark`                                    TEXT
, `filling_color`                           TEXT
, `font_color`                               TEXT
, `archived`                                 BOOLEAN NOT NULL
, `archiving_date`                           DATE
, `archived_flight_time_cycles`             INTEGER
, `archived_flight_time_hours`             INTEGER
, PRIMARY KEY(`uid`)
);

CREATE TABLE `wheel_repairings`
(
    `uid`                                INTEGER NOT NULL AUTO_INCREMENT
, `ac_r_number`                          TEXT NOT NULL
, `_IND`                                    INTEGER
, `p_number`                               TEXT
, `s_number`                               TEXT
, `type`                                    INTEGER
, `pre_overhaul_repairings_count`          INTEGER
, `repairing_type`                         INTEGER
, `installation_date`                       DATE
, `removing_date`                           DATE
, `flight_time_cycles`                       INTEGER
, `flight_time_hours`                       INTEGER
, `flight_time_from_overhaul_cycles`        INTEGER
, `flight_time_from_overhaul_hours`         INTEGER
, `remark`                                    TEXT
, PRIMARY KEY(`uid`)
);

CREATE TABLE `history_events`
(
    `date`                                    TIMESTAMP NOT NULL
, `user_name`                                TEXT NOT NULL
, `ac_r_number`                              TEXT NOT NULL
, `ac_archived`                              BOOLEAN NOT NULL
, `object_type`                              TEXT NOT NULL

```

## ALTIR, v1.2.8. Installation guide.

```
, `area`          TEXT NOT NULL
, `object_uid`   INTEGER
, `object_description` TEXT NOT NULL
, `action_type`  TEXT NOT NULL
, `data_before`  TEXT NOT NULL
, `data_after`   TEXT NOT NULL
);

CREATE TABLE `save_actions`
(
    `index`          INTEGER NOT NULL AUTO_INCREMENT
, `ac_r_numbers`   TEXT
, `timestamp`      TIMESTAMP DEFAULT CURRENT_TIMESTAMP
, `user`           INTEGER
, `created_reports` TEXT
, `changed_reports` TEXT
, `deleted_reports` TEXT
, `created_nars`   TEXT
, `changed_nars`   TEXT
, `deleted_nars`   TEXT
, `created_components` TEXT
, `changed_components` TEXT
, `deleted_components` TEXT
, `created_forms`  TEXT
, `changed_forms`  TEXT
, `deleted_forms`  TEXT
, `created_tasks`  TEXT
, `changed_tasks`  TEXT
, `deleted_tasks`  TEXT
, `created_wheel_repairings` TEXT
, `changed_wheel_repairings` TEXT
, `deleted_wheel_repairings` TEXT
, PRIMARY KEY(`index`)
);

CREATE TABLE `save_sequence`
(
    `index`          INTEGER NOT NULL AUTO_INCREMENT
, `saver`           TEXT NOT NULL
, `from_time`       TIMESTAMP
, `save_time`       TIMESTAMP DEFAULT CURRENT_TIMESTAMP
, `saving`          BOOLEAN
, `saved`           BOOLEAN
, PRIMARY KEY(`index`)
);

CREATE TABLE `users`
(
    `uid`            INTEGER NOT NULL AUTO_INCREMENT
, `login`           TEXT NOT NULL
, `password`        TEXT
, `name`            TEXT
, `role`           INTEGER NOT NULL DEFAULT '2'
, `archived`        BOOLEAN NOT NULL DEFAULT '0'
, PRIMARY KEY(`uid`)
);

INSERT INTO `users` VALUES
(0,"admin","0793d5d4dc589987694b3e272c0ebec0","Administrator",0,0);
INSERT INTO `users` VALUES
(99,"guest","239cbf58bc244fdd3b33a053423f7611","Guest",2,0);

CREATE INDEX `reports_IND_asc` ON `reports` (`_IND` ASC);
CREATE INDEX `nars_IND_asc` ON `nars` (`_IND` ASC);
```

**ALTIR, v1.2.8. Installation guide.**

```
CREATE INDEX `components_IND_asc_subindex_asc` ON `components` (`_IND`  
ASC, `sub_index` ASC);  
CREATE INDEX `forms_kind_asc` ON `forms` (`kind`(8) ASC);  
CREATE INDEX `tasks_kind_asc_ata_asc_number_asc` ON `tasks` (`number`(24)  
ASC, `ata` ASC, `kind`(8) ASC);  
CREATE INDEX `wheel_repairings_IND_asc` ON `wheel_repairings` (`_IND` ASC);
```

Vorontsov D.S., Romanov R.A.

## 8. Annex №3. SQL queries for creating tables in PostgreSQL DB.

```

CREATE TABLE "service_info"
(
    "uid"                                INTEGER NOT NULL
    , "schema_version"                   TEXT
    , "enterprise_name"                   TEXT
    , "application_site"                  TEXT
    , "support_site"                       TEXT
    , "support_email"                     TEXT
    , "support_tel"                       TEXT
    , "active_readings"                   INTEGER NOT NULL DEFAULT 0
    , UNIQUE ("uid")
);
INSERT INTO service_info VALUES
(1, '1.0', 'developers', 'http://altir.info/', 'http://altir.info/support/', 'info@altir.info', '', 0);

CREATE TABLE "aircrafts"
(
    "r_number"                            TEXT NOT NULL
    , "type"                                TEXT
    , "s_number"                            TEXT
    , "production_date"                     DATE
    , "acceptance_date"                     DATE NOT NULL
    , "base_flight_time_cycles"             INTEGER
    , "base_flight_time_hours"             INTEGER
    , "base_flight_time_minutes"           INTEGER
    , "overhaul_flight_time_cycles"        TEXT
    , "overhaul_flight_time_hours"         TEXT
    , "overhaul_flight_time_minutes"       TEXT
    , "overhaul_date"                      TEXT
    , "overhaul_remark"                    TEXT
    , "archived"                           BOOLEAN NOT NULL
    , "archiving_date"                     DATE
    , UNIQUE ("r_number")
);

CREATE TABLE "engines"
(
    "uid"                                SERIAL NOT NULL
    , "ac_r_number"                        TEXT NOT NULL
    , "s_number"                            TEXT NOT NULL
    , "kind"                                INTEGER NOT NULL
    , "index"                               INTEGER NOT NULL
    , "type"                                TEXT
    , "b_number"                            TEXT
    , "production_date"                     DATE
    , "installation_date"                   DATE
    , "base_flight_time_cycles"             INTEGER
    , "base_flight_time_hours"             INTEGER
    , "base_flight_time_minutes"           INTEGER
    , "overhaul_flight_time_cycles"        TEXT
    , "overhaul_flight_time_hours"         TEXT
    , "overhaul_flight_time_minutes"       TEXT
    , "overhaul_date"                      TEXT
    , "overhaul_remark"                    TEXT
    , "archived"                           BOOLEAN NOT NULL
    , "archiving_date"                     DATE
    , "archived_flight_time_cycles"        INTEGER
    , "archived_flight_time_hours"         INTEGER
    , "archived_flight_time_minutes"       INTEGER
    , PRIMARY KEY ("uid")
);

```

## ALTIR, v1.2.8. Installation guide.

);

CREATE TABLE "reports"

```
(
    "uid" SERIAL NOT NULL
  , "ac_r_number" TEXT NOT NULL
  , "_IND" INTEGER
  , "index" INTEGER
  , "to_form" TEXT
  , "to_description" TEXT
  , "performance_date" TEXT
  , "flight_time_on_performance_cycles" INTEGER
  , "flight_time_on_performance_hours" INTEGER
  , "card_number" TEXT
  , "filling_color" TEXT
  , "font_color" TEXT
  , PRIMARY KEY ("uid")
);
```

CREATE TABLE "nars"

```
(
    "uid" SERIAL NOT NULL
  , "ac_r_number" TEXT NOT NULL
  , "_IND" INTEGER
  , "date" DATE
  , "flight_number" TEXT
  , "flight_direction" TEXT
  , "page" TEXT
  , "cycles_per_flight" INTEGER
  , "takeoff_time_hours" INTEGER
  , "takeoff_time_minutes" INTEGER
  , "landing_time_hours" INTEGER
  , "landing_time_minutes" INTEGER
  , "user_id" INTEGER
  , "aircraft_flight_time_specified_cycles" INTEGER
  , "aircraft_flight_time_specified_hours" INTEGER
  , "aircraft_flight_time_specified_minutes" INTEGER
  , "engines_flight_time_specified_cycles" TEXT
  , "engines_flight_time_specified_hours" TEXT
  , "engines_flight_time_specified_minutes" TEXT
  , "filling_color" TEXT
  , "font_color" TEXT
  , PRIMARY KEY ("uid")
);
```

CREATE TABLE "components"

```
(
    "uid" SERIAL NOT NULL
  , "ac_r_number" TEXT NOT NULL
  , "_IND" INTEGER NOT NULL
  , "name" TEXT
  , "p_number" TEXT
  , "s_number" TEXT
  , "ata" INTEGER
  , "production_date" DATE
  , "installation_date" DATE
  , "sertificate" TEXT
  , "type" INTEGER
  , "nar_source" INTEGER
  , "nar_source_flight_time_cycles" INTEGER
  , "nar_source_flight_time_hours" INTEGER
  , "frozing_date" DATE
  , "frozen_flight_time_cycles" INTEGER
  , "frozen_flight_time_hours" INTEGER
);
```

ALTIR, v1.2.8. Installation guide.

```

, "frozen_flight_time_from_overhaul_cycles"      INTEGER
, "frozen_flight_time_from_overhaul_hours"      INTEGER
, "remark"                                       TEXT
, "status"                                       INTEGER
, "base_flight_time_cycles"                    INTEGER
, "base_flight_time_hours"                    INTEGER
, "base_flight_time_from_overhaul_cycles"      INTEGER
, "base_flight_time_from_overhaul_hours"      INTEGER
, "sub_index"                                  INTEGER NOT NULL
, "pto_task"                                    TEXT
, "counting_date"                              DATE
, "counting_time_cycles"                      INTEGER
, "counting_time_hours"                      INTEGER
, "life_time_days"                            INTEGER
, "life_time_cycles"                          INTEGER
, "life_time_hours"                          INTEGER
, "before_transposition_nar_source_flight_time_cycles" TEXT
, "before_transposition_nar_source_flight_time_hours" TEXT
, "after_transposition_nar_source_flight_time_cycles" TEXT
, "after_transposition_nar_source_flight_time_hours" TEXT
, "transposition_count"                      INTEGER
, "transposition_aircrafts"                  TEXT
, "frozen"                                    BOOLEAN NOT NULL
, "vacant"                                    BOOLEAN NOT NULL
, "filling_color"                             TEXT
, "font_color"                                TEXT
, "archived"                                  BOOLEAN NOT NULL
, "archiving_date"                           DATE
, "archived_flight_time_cycles"              TEXT
, "archived_flight_time_hours"              TEXT
, "archived_flight_time_from_overhaul_cycles" TEXT
, "archived_flight_time_from_overhaul_hours" TEXT
, "restored_flight_time_cycles"              TEXT
, "restored_flight_time_hours"              TEXT
, "restored_flight_time_from_overhaul_cycles" TEXT
, "restored_flight_time_from_overhaul_hours" TEXT
, "history_p_number"                          TEXT
, "history_s_number"                          TEXT
, PRIMARY KEY ("uid")
);

CREATE TABLE "forms"
(
    "uid" SERIAL NOT NULL
, "ac_r_number" TEXT NOT NULL
, "kind" TEXT
, "nar_source_flight_time_cycles" INTEGER
, "nar_source_flight_time_hours" INTEGER
, "counting_date" DATE
, "counting_time_cycles" INTEGER
, "counting_time_hours" INTEGER
, "interval_cycles" INTEGER
, "interval_days" INTEGER
, "interval_hours" INTEGER
, "performance_remaining_date_specified" DATE
, "mjss" TEXT
, "performance_date" DATE
, "remark" TEXT
, "filling_color" TEXT
, "font_color" TEXT
, "archived" BOOLEAN NOT NULL
, "archiving_date" DATE
, "archived_flight_time_cycles" INTEGER
, "archived_flight_time_hours" INTEGER

```

## ALTIR, v1.2.8. Installation guide.

```
        , PRIMARY KEY ("uid")
);

CREATE TABLE "tasks"
(
    "uid" SERIAL NOT NULL
    , "ac_r_number" TEXT NOT NULL
    , "number" TEXT
    , "description" TEXT
    , "ata" INTEGER
    , "type" INTEGER
    , "kind" TEXT
    , "creation_date" DATE
    , "nar_source" INTEGER
    , "nar_source_flight_time_cycles" INTEGER
    , "nar_source_flight_time_hours" INTEGER
    , "counting_date" DATE
    , "counting_time_cycles" INTEGER
    , "counting_time_hours" INTEGER
    , "interval_cycles" INTEGER
    , "interval_days" INTEGER
    , "interval_hours" INTEGER
    , "performance_remaining_date_specified" DATE
    , "mjss" TEXT
    , "performance_date" DATE
    , "remark" TEXT
    , "filling_color" TEXT
    , "font_color" TEXT
    , "archived" BOOLEAN NOT NULL
    , "archiving_date" DATE
    , "archived_flight_time_cycles" INTEGER
    , "archived_flight_time_hours" INTEGER
    , PRIMARY KEY ("uid")
);

CREATE TABLE "wheel_repairings"
(
    "uid" SERIAL NOT NULL
    , "ac_r_number" TEXT NOT NULL
    , "_IND" INTEGER
    , "p_number" TEXT
    , "s_number" TEXT
    , "type" INTEGER
    , "pre_overhaul_repairings_count" INTEGER
    , "repairing_type" INTEGER
    , "installation_date" DATE
    , "removing_date" DATE
    , "flight_time_cycles" INTEGER
    , "flight_time_hours" INTEGER
    , "flight_time_from_overhaul_cycles" INTEGER
    , "flight_time_from_overhaul_hours" INTEGER
    , "remark" TEXT
    , PRIMARY KEY ("uid")
);

CREATE TABLE "history_events"
(
    "date" TIMESTAMP NOT NULL
    , "user_name" TEXT NOT NULL
    , "ac_r_number" TEXT NOT NULL
    , "ac_archived" BOOLEAN NOT NULL
    , "object_type" TEXT NOT NULL
    , "area" TEXT NOT NULL
    , "object_uid" INTEGER

```

## ALTIR, v1.2.8. Installation guide.

```
, "object_description" TEXT NOT NULL
, "action_type"         TEXT NOT NULL
, "data_before"         TEXT NOT NULL
, "data_after"          TEXT NOT NULL
);

CREATE TABLE "save_actions"
(
    "index"                SERIAL NOT NULL
, "ac_r_numbers"          TEXT
, "timestamp"             TIMESTAMP DEFAULT CURRENT_TIMESTAMP
, "user"                  INTEGER
, "created_reports"       TEXT
, "changed_reports"       TEXT
, "deleted_reports"       TEXT
, "created_nars"          TEXT
, "changed_nars"          TEXT
, "deleted_nars"          TEXT
, "created_components"    TEXT
, "changed_components"    TEXT
, "deleted_components"    TEXT
, "created_forms"         TEXT
, "changed_forms"         TEXT
, "deleted_forms"         TEXT
, "created_tasks"         TEXT
, "changed_tasks"         TEXT
, "deleted_tasks"         TEXT
, "created_wheel_repairings" TEXT
, "changed_wheel_repairings" TEXT
, "deleted_wheel_repairings" TEXT
, PRIMARY KEY("index")
);

CREATE TABLE "save_sequence"
(
    "index"                SERIAL NOT NULL
, "saver"                 TEXT NOT NULL
, "from_time"             TIMESTAMP
, "save_time"             TIMESTAMP DEFAULT CURRENT_TIMESTAMP
, "saving"                BOOLEAN
, "saved"                 BOOLEAN
, PRIMARY KEY("index")
);

CREATE TABLE "users"
(
    "uid"                  SERIAL NOT NULL
, "login"                 TEXT NOT NULL
, "password"              TEXT
, "name"                  TEXT
, "role"                  INTEGER NOT NULL DEFAULT '2'
, "archived"              BOOLEAN NOT NULL DEFAULT '0'
, PRIMARY KEY("uid")
);

INSERT INTO users VALUES
(0, 'admin', '0793d5d4dc589987694b3e272c0ebec0', 'Administrator', 0, false);
INSERT INTO users VALUES
(99, 'guest', '239cbf58bc244fdd3b33a053423f7611', 'Guest', 2, false);

CREATE INDEX "reports_IND_asc" ON "reports" ("_IND" ASC);
CREATE INDEX "nars_IND_asc" ON "nars" ("_IND" ASC);
CREATE INDEX "components_IND_asc_subindex_asc" ON "components" ("_IND"
ASC, "sub_index" ASC);
CREATE INDEX "forms_kind_asc" ON "forms" ("kind" ASC);
```



ALTIR, v1.2.8. Installation guide.

```
CREATE INDEX "tasks_kind_asc_ata_asc_number_asc" ON "tasks" ("number"  
ASC,"ata" ASC,"kind" ASC);  
CREATE INDEX "wheel_repairings_IND_asc" ON "wheel_repairings" ("_IND" ASC);
```

Vorontsov D.S., Romanov R.A.

## 9. Annex №4. SQL queries for creating tables in Firebird DB.

```

CREATE TABLE "service_info"
(
    "uid"                    INTEGER NOT NULL
    , "schema_version"      BLOB SUB_TYPE TEXT
    , "enterprise_name"     BLOB SUB_TYPE TEXT
    , "application_site"    BLOB SUB_TYPE TEXT
    , "support_site"        BLOB SUB_TYPE TEXT
    , "support_email"       BLOB SUB_TYPE TEXT
    , "support_tel"         BLOB SUB_TYPE TEXT
    , "active_readings"     INTEGER DEFAULT 0 NOT NULL
    , UNIQUE ("uid")
);
INSERT INTO "service_info" VALUES
(1, '1.0', 'developers', 'http://altir.info/', 'http://altir.info/support/', 'info@altir.info', '', 0);

CREATE TABLE "aircrafts"
(
    "r_number"              VARCHAR(32) NOT NULL
    , "type"                 BLOB SUB_TYPE TEXT
    , "s_number"             BLOB SUB_TYPE TEXT
    , "production_date"     DATE
    , "acceptance_date"     DATE NOT NULL
    , "base_flight_time_cycles" INTEGER
    , "base_flight_time_hours" INTEGER
    , "base_flight_time_minutes" INTEGER
    , "overhaul_flight_time_cycles" BLOB SUB_TYPE TEXT
    , "overhaul_flight_time_hours" BLOB SUB_TYPE TEXT
    , "overhaul_flight_time_minutes" BLOB SUB_TYPE TEXT
    , "overhaul_date"       BLOB SUB_TYPE TEXT
    , "overhaul_remark"     BLOB SUB_TYPE TEXT
    , "archived"            BOOLEAN NOT NULL
    , "archiving_date"      DATE
    , UNIQUE ("r_number")
);

CREATE TABLE "engines"
(
    "uid"                    INTEGER GENERATED BY DEFAULT AS
IDENTITY PRIMARY KEY
    , "ac_r_number"          BLOB SUB_TYPE TEXT NOT NULL
    , "s_number"             BLOB SUB_TYPE TEXT NOT NULL
    , "kind"                 INTEGER NOT NULL
    , "index"                INTEGER NOT NULL
    , "type"                 BLOB SUB_TYPE TEXT
    , "b_number"             BLOB SUB_TYPE TEXT
    , "production_date"     DATE
    , "installation_date"   DATE
    , "base_flight_time_cycles" INTEGER
    , "base_flight_time_hours" INTEGER
    , "base_flight_time_minutes" INTEGER
    , "overhaul_flight_time_cycles" BLOB SUB_TYPE TEXT
    , "overhaul_flight_time_hours" BLOB SUB_TYPE TEXT
    , "overhaul_flight_time_minutes" BLOB SUB_TYPE TEXT
    , "overhaul_date"       BLOB SUB_TYPE TEXT
    , "overhaul_remark"     BLOB SUB_TYPE TEXT
    , "archived"            BOOLEAN NOT NULL
    , "archiving_date"      DATE
    , "archived_flight_time_cycles" INTEGER
    , "archived_flight_time_hours" INTEGER
    , "archived_flight_time_minutes" INTEGER

```

## ALTIR, v1.2.8. Installation guide.

```
);

CREATE TABLE "reports"
(
    "uid"                                INTEGER GENERATED BY DEFAULT AS
IDENTITY PRIMARY KEY
    , "ac_r_number"                       BLOB SUB_TYPE TEXT NOT NULL
    , "_IND"                               INTEGER
    , "index"                             INTEGER
    , "to_form"                           BLOB SUB_TYPE TEXT
    , "to_description"                    BLOB SUB_TYPE TEXT
    , "performance_date"                  BLOB SUB_TYPE TEXT
    , "flight_time_on_performance_cyc"    INTEGER
    , "flight_time_on_performance_hou"    INTEGER
    , "card_number"                       BLOB SUB_TYPE TEXT
    , "filling_color"                     BLOB SUB_TYPE TEXT
    , "font_color"                         BLOB SUB_TYPE TEXT
);

CREATE TABLE "nars"
(
    "uid"                                INTEGER GENERATED BY DEFAULT
AS IDENTITY PRIMARY KEY
    , "ac_r_number"                       BLOB SUB_TYPE TEXT NOT NULL
    , "_IND"                               INTEGER
    , "date"                              DATE
    , "flight_number"                     BLOB SUB_TYPE TEXT
    , "flight_direction"                  BLOB SUB_TYPE TEXT
    , "page"                              BLOB SUB_TYPE TEXT
    , "cycles_per_flight"                 INTEGER
    , "takeoff_time_hours"                 INTEGER
    , "takeoff_time_minutes"               INTEGER
    , "landing_time_hours"                 INTEGER
    , "landing_time_minutes"               INTEGER
    , "user_id"                           INTEGER
    , "ac_flight_time_specified_cyc"      INTEGER
    , "ac_flight_time_specified_hou"      INTEGER
    , "ac_flight_time_specified_min"      INTEGER
    , "eng_flight_time_specified_cyc"     BLOB SUB_TYPE TEXT
    , "eng_flight_time_specified_hou"     BLOB SUB_TYPE TEXT
    , "eng_flight_time_specified_min"     BLOB SUB_TYPE TEXT
    , "filling_color"                     BLOB SUB_TYPE TEXT
    , "font_color"                         BLOB SUB_TYPE TEXT
);

CREATE TABLE "components"
(
    "uid"                                INTEGER GENERATED BY DEFAULT
AS IDENTITY PRIMARY KEY
    , "ac_r_number"                       BLOB SUB_TYPE TEXT NOT NULL
    , "_IND"                               INTEGER NOT NULL
    , "name"                              BLOB SUB_TYPE TEXT
    , "p_number"                           BLOB SUB_TYPE TEXT
    , "s_number"                           BLOB SUB_TYPE TEXT
    , "ata"                                INTEGER
    , "production_date"                    DATE
    , "installation_date"                  DATE
    , "sertificate"                        BLOB SUB_TYPE TEXT
    , "type"                               INTEGER
    , "nar_source"                         INTEGER
    , "nar_source_flight_time_cycles"     INTEGER
    , "nar_source_flight_time_hours"      INTEGER
    , "frozing_date"                       DATE
    , "frozen_flight_time_cycles"         INTEGER
);
```

## ALTIR, v1.2.8. Installation guide.

```

, "frozen_flight_time_hours"          INTEGER
, "frozen_ft_from_overhaul_cyc"       INTEGER
, "frozen_ft_from_overhaul_hou"       INTEGER
, "remark"                             BLOB SUB_TYPE TEXT
, "status"                             INTEGER
, "base_flight_time_cycles"           INTEGER
, "base_flight_time_hours"            INTEGER
, "base_ft_from_overhaul_cyc"         INTEGER
, "base_ft_from_overhaul_hou"         INTEGER
, "sub_index"                         INTEGER NOT NULL
, "pto_task"                          BLOB SUB_TYPE TEXT
, "counting_date"                     DATE
, "counting_time_cycles"              INTEGER
, "counting_time_hours"               INTEGER
, "life_time_days"                    INTEGER
, "life_time_cycles"                  INTEGER
, "life_time_hours"                   INTEGER
, "before_tran_nar_source_ft_cyc"     BLOB SUB_TYPE TEXT
, "before_tran_nar_source_ft_hou"     BLOB SUB_TYPE TEXT
, "after_tran_nar_source_ft_cyc"      BLOB SUB_TYPE TEXT
, "after_tran_nar_source_ft_hou"      BLOB SUB_TYPE TEXT
, "transposition_count"               INTEGER
, "transposition_aircrafts"           BLOB SUB_TYPE TEXT
, "frozen"                            BOOLEAN NOT NULL
, "vacant"                            BOOLEAN NOT NULL
, "filling_color"                     BLOB SUB_TYPE TEXT
, "font_color"                        BLOB SUB_TYPE TEXT
, "archived"                          BOOLEAN NOT NULL
, "archiving_date"                    DATE
, "archived_flight_time_cycles"       BLOB SUB_TYPE TEXT
, "archived_flight_time_hours"        BLOB SUB_TYPE TEXT
, "archived_ft_from_overhaul_cyc"     BLOB SUB_TYPE TEXT
, "archived_ft_from_overhaul_hou"     BLOB SUB_TYPE TEXT
, "restored_flight_time_cycles"       BLOB SUB_TYPE TEXT
, "restored_flight_time_hours"        BLOB SUB_TYPE TEXT
, "restored_ft_from_overhaul_cyc"     BLOB SUB_TYPE TEXT
, "restored_ft_from_overhaul_hou"     BLOB SUB_TYPE TEXT
, "history_p_number"                  BLOB SUB_TYPE TEXT
, "history_s_number"                  BLOB SUB_TYPE TEXT
);

CREATE TABLE "forms"
(
    "uid"                                INTEGER GENERATED BY DEFAULT AS
IDENTITY PRIMARY KEY
, "ac_r_number"                         BLOB SUB_TYPE TEXT NOT NULL
, "kind"                                VARCHAR(32)
, "nar_source_flight_time_cycles"       INTEGER
, "nar_source_flight_time_hours"       INTEGER
, "counting_date"                       DATE
, "counting_time_cycles"                INTEGER
, "counting_time_hours"                 INTEGER
, "interval_cycles"                     INTEGER
, "interval_days"                       INTEGER
, "interval_hours"                      INTEGER
, "performance_remaining_date_spec"     DATE
, "mjss"                                BLOB SUB_TYPE TEXT
, "performance_date"                    DATE
, "remark"                              BLOB SUB_TYPE TEXT
, "filling_color"                       BLOB SUB_TYPE TEXT
, "font_color"                          BLOB SUB_TYPE TEXT
, "archived"                            BOOLEAN NOT NULL
, "archiving_date"                      DATE
, "archived_flight_time_cycles"         INTEGER

```

## ALTIR, v1.2.8. Installation guide.

```
        , "archived_flight_time_hours"          INTEGER
    );

CREATE TABLE "tasks"
(
    "uid"                                         INTEGER GENERATED BY DEFAULT AS
IDENTITY PRIMARY KEY
    , "ac_r_number"                             BLOB SUB_TYPE TEXT NOT NULL
    , "number"                                  VARCHAR(64)
    , "description"                             BLOB SUB_TYPE TEXT
    , "ata"                                      INTEGER
    , "type"                                    INTEGER
    , "kind"                                    VARCHAR(32)
    , "creation_date"                           DATE
    , "nar_source"                              INTEGER
    , "nar_source_flight_time_cycles"           INTEGER
    , "nar_source_flight_time_hours"           INTEGER
    , "counting_date"                           DATE
    , "counting_time_cycles"                    INTEGER
    , "counting_time_hours"                     INTEGER
    , "interval_cycles"                         INTEGER
    , "interval_days"                           INTEGER
    , "interval_hours"                          INTEGER
    , "performance_remaining_date_spec"         DATE
    , "mjss"                                    BLOB SUB_TYPE TEXT
    , "performance_date"                        DATE
    , "remark"                                  BLOB SUB_TYPE TEXT
    , "filling_color"                           BLOB SUB_TYPE TEXT
    , "font_color"                              BLOB SUB_TYPE TEXT
    , "archived"                                BOOLEAN NOT NULL
    , "archiving_date"                           DATE
    , "archived_flight_time_cycles"             INTEGER
    , "archived_flight_time_hours"             INTEGER
);

CREATE TABLE "wheel_repairings"
(
    "uid"                                         INTEGER GENERATED BY DEFAULT AS
IDENTITY PRIMARY KEY
    , "ac_r_number"                             BLOB SUB_TYPE TEXT NOT NULL
    , "_IND"                                    INTEGER
    , "p_number"                                BLOB SUB_TYPE TEXT
    , "s_number"                                BLOB SUB_TYPE TEXT
    , "type"                                    INTEGER
    , "pre_overhaul_repairings_count"           INTEGER
    , "repairing_type"                          INTEGER
    , "installation_date"                       DATE
    , "removing_date"                           DATE
    , "flight_time_cycles"                       INTEGER
    , "flight_time_hours"                       INTEGER
    , "flight_time_from_overhaul_cyc"           INTEGER
    , "flight_time_from_overhaul_hou"           INTEGER
    , "remark"                                  BLOB SUB_TYPE TEXT
);

CREATE TABLE "history_events"
(
    "date"                                       TIMESTAMP NOT NULL
    , "user_name"                               BLOB SUB_TYPE TEXT NOT NULL
    , "ac_r_number"                             BLOB SUB_TYPE TEXT NOT NULL
    , "ac_archived"                             BOOLEAN NOT NULL
    , "object_type"                             BLOB SUB_TYPE TEXT NOT NULL
    , "area"                                    BLOB SUB_TYPE TEXT NOT NULL
    , "object_uid"                              INTEGER
);
```

## ALTIR, v1.2.8. Installation guide.

```
, "object_description" BLOB SUB_TYPE TEXT NOT NULL
, "action_type"         BLOB SUB_TYPE TEXT NOT NULL
, "data_before"        BLOB SUB_TYPE TEXT NOT NULL
, "data_after"         BLOB SUB_TYPE TEXT NOT NULL
);

CREATE TABLE "save_actions"
(
    "index"              INTEGER GENERATED BY DEFAULT AS IDENTITY
PRIMARY KEY
    , "ac_r_numbers"    BLOB SUB_TYPE TEXT
    , "timestamp"       TIMESTAMP DEFAULT CURRENT_TIMESTAMP
    , "user"             INTEGER
    , "created_reports" BLOB SUB_TYPE TEXT
    , "changed_reports" BLOB SUB_TYPE TEXT
    , "deleted_reports" BLOB SUB_TYPE TEXT
    , "created_nars"    BLOB SUB_TYPE TEXT
    , "changed_nars"    BLOB SUB_TYPE TEXT
    , "deleted_nars"    BLOB SUB_TYPE TEXT
    , "created_components" BLOB SUB_TYPE TEXT
    , "changed_components" BLOB SUB_TYPE TEXT
    , "deleted_components" BLOB SUB_TYPE TEXT
    , "created_forms"   BLOB SUB_TYPE TEXT
    , "changed_forms"   BLOB SUB_TYPE TEXT
    , "deleted_forms"   BLOB SUB_TYPE TEXT
    , "created_tasks"   BLOB SUB_TYPE TEXT
    , "changed_tasks"   BLOB SUB_TYPE TEXT
    , "deleted_tasks"   BLOB SUB_TYPE TEXT
    , "created_wheel_repairings" BLOB SUB_TYPE TEXT
    , "changed_wheel_repairings" BLOB SUB_TYPE TEXT
    , "deleted_wheel_repairings" BLOB SUB_TYPE TEXT
);

CREATE TABLE "save_sequence"
(
    "index"              INTEGER GENERATED BY DEFAULT AS IDENTITY PRIMARY KEY
    , "saver"            BLOB SUB_TYPE TEXT NOT NULL
    , "from_time"        TIMESTAMP
    , "save_time"        TIMESTAMP DEFAULT CURRENT_TIMESTAMP
    , "saving"           BOOLEAN
    , "saved"            BOOLEAN
);

CREATE TABLE "users"
(
    "uid"                INTEGER PRIMARY KEY
    , "login"            BLOB SUB_TYPE TEXT NOT NULL
    , "password"         BLOB SUB_TYPE TEXT
    , "name"             BLOB SUB_TYPE TEXT
    , "role"             INTEGER DEFAULT 2 NOT NULL
    , "archived"         BOOLEAN DEFAULT FALSE NOT NULL
);

INSERT INTO "users" VALUES
(0, 'admin', '0793d5d4dc589987694b3e272c0ebec0', 'Administrator', 0, FALSE);
INSERT INTO "users" VALUES
(99, 'guest', '239cbf58bc244fdd3b33a053423f7611', 'Guest', 2, FALSE);

CREATE ASC INDEX "reports_IND_asc" ON "reports" "_IND";
CREATE ASC INDEX "nars_IND_asc" ON "nars" "_IND";
CREATE ASC INDEX "components_IND_subindex_asc" ON "components" ("_IND",
"sub_index");
CREATE ASC INDEX "forms_kind_asc" ON "forms" "kind";
```

ALTIR, v1.2.8. Installation guide.

```
CREATE ASC INDEX "tasks_kind_ata_number_asc" ON "tasks" ("number", "ata",  
"kind");  
CREATE ASC INDEX "wheel_repairings_IND_asc" ON "wheel_repairings" "_IND";
```

Vorontsov D.S., Romanov R.A.