Practical work 3

Development of an interface for entering data into worksheets

Goals:

Master the technology:

• creating composite forms using the wizard; • creating subforms in design mode; • creating nested subforms Table of contents

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We will call forms simple if they are created on the basis of one table or two tables connected by a **one-to-one relationship.** By now, the following simple forms should be created in the DEANAT database:

We:

- *Teacher - a form* that allows you to view information about each teacher, presented on separate cards, including photographs. The same form allows you to enter new data about teachers and changes thread available.
- *The student form* is created on the basis of two tables *Student* and *Additional_information,* having a 1:1 connection and is intended for viewing and entering data about students tah.

We will call forms compound if they are created based on data from two or more tables connected by a **one-to-many relationship.** A compound form consists of a main form that includes one or more subordinate forms. You can use the following options to create forms:

• creating forms using the designer; • creating forms using a wizard.

Task 1. Creating a composite form using the Create a composite form ***Discipline-Grades wizard.*** This form is created on the basis of *the Discipline, Grade, Student* tables having connections **1:M.** This form allows you to view the grades of all students in the selected discipline, as well as enter grades if they have not yet been assigned, for example, based on exam results.

Work technology

1. Open the list of objects in the database navigation pane, select Forms. 2. Select the Form Wizard mode (on the ribbon, Create tab/Forms group/Other forms button/select Form Wizard from the list).
3. On the first step of the wizard
   • from the *Grade* table , select the *Student code* field
   • from the *Student* table, fields *Name, Patronymic, Group Code;*
   • from the *Assessment* table , select the fields *Semester, Delivery date, PD code;* • from the *Discipline* table , select the *Title field;*
   • from the *Teacher* table, select *the Last Name, First Name, Patronymic fields;* • from the *Valuation* table, select the fields *Type of control, Valuation.* Further.

Note! To create this form, we use data from 4 tables and select fields from the tables in some logical sequence.

4. At the next step of the wizard, select the type of data presentation. By default, the wizard suggests creating a main form using data from the *Evaluation table.* Select Discipline as the main table . Then the type of data presentation will include two subordinate forms: one for data about teachers, the other for data about students and grades. You should agree with these guidelines. Further.

5. In the next step, select the appearance of the subform. Choose a ribbon view for teachers and a table view for grades. Further.
6. In the next step, select a design style. Further. 7. In the next step, enter the names of the forms: main – ***Discipline and Grades,*** subordinate ***Discipline and Grades (Teacher)-sub, Discipline and Grades (Student-Oc)-sub.*** Ready. The form will open in data view mode. **Note.** The names of the main and subordinate forms briefly reflect the meaning of the presented data. 8. Review how the data is arranged on the form. Find the data that relates to the main form (this is the name of the discipline). Find the subforms and see what data they contain.

9. Find the viewing controls. View the grades given to which students by the teachers in the discipline. View grades in other disciplines. Close the form.

10. Make sure that THREE new created forms appear in the list of forms.

11. After creating the form, you must make sure that you can enter new source data in it. To enter data, open the main form.

Note! You can enter data through a compound form only into the lowest-level subtable. In our information-logical model, this is the *Evaluation table.* Thus. Through this form, you can enter grades only for existing students, in existing disciplines and teachers assigned to them.

12. Enter grades for students in some disciplines. To do this, select the student's last name from the drop-down list. This list corresponds to the previously created substitution list (LR1,2, task 8) in the *Evaluation table.* When you select a student code (last name), the first name and patronymic group are loaded into the table automatically. Enter the remaining information on the line.

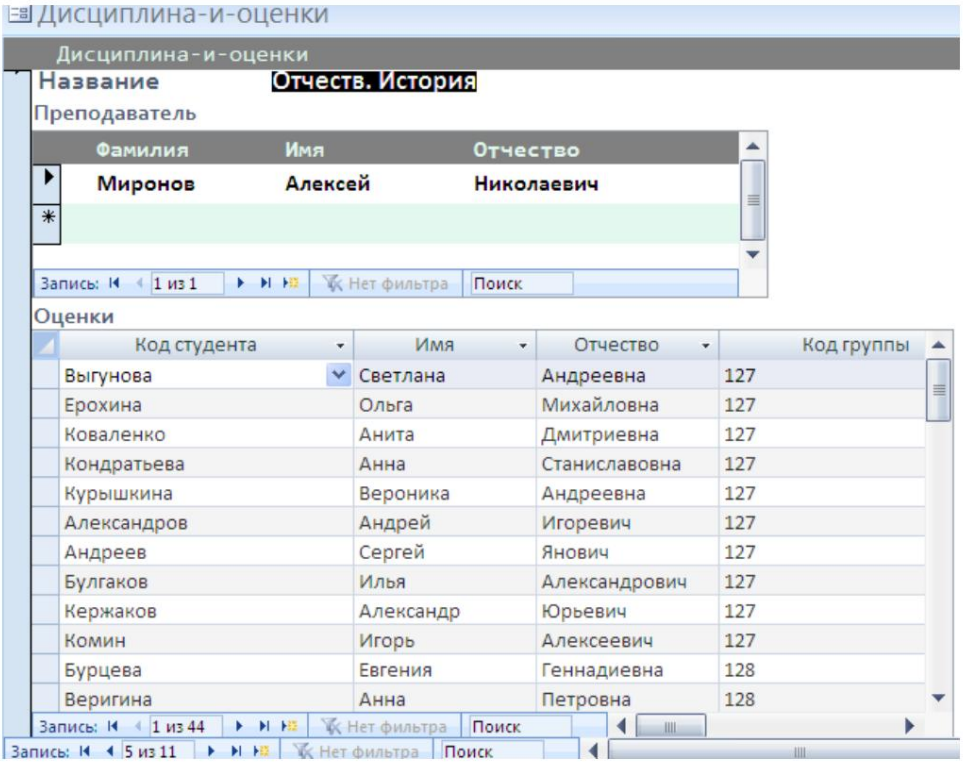
Task 2: Editing Compound Forms

Resize the columns of a subtabular form so that all data in the subforms is visible. Change the size and location of objects in

the main form (Fig. 1).

Work technology

1. Open the main *Discipline and Grades form.* Go to Design mode
   Torah.
2. In the main form, edit the size of the subforms (width and height).
   cell) and the location of objects (Fig. 1). You can also change the font, size, and character style for fields and labels.
3. Go to the form viewing mode and edit the width of the columns of the subordinate form *Discipline and Grades (Study-Oc)-subform* so that the data in all columns is visible.
4. The form's appearance is adjusted until the developer is satisfied with the form's appearance.



Rice. 1. Discipline and Grades form after editing

Note! To edit the position of elements on the form, select the desired control element (for example, *the Teacher inscription).* If it is associated with data on teachers as a whole, you need to select Layout/Delete on the Arrange tab.

Task 3. Creating a composite form Student and Grades

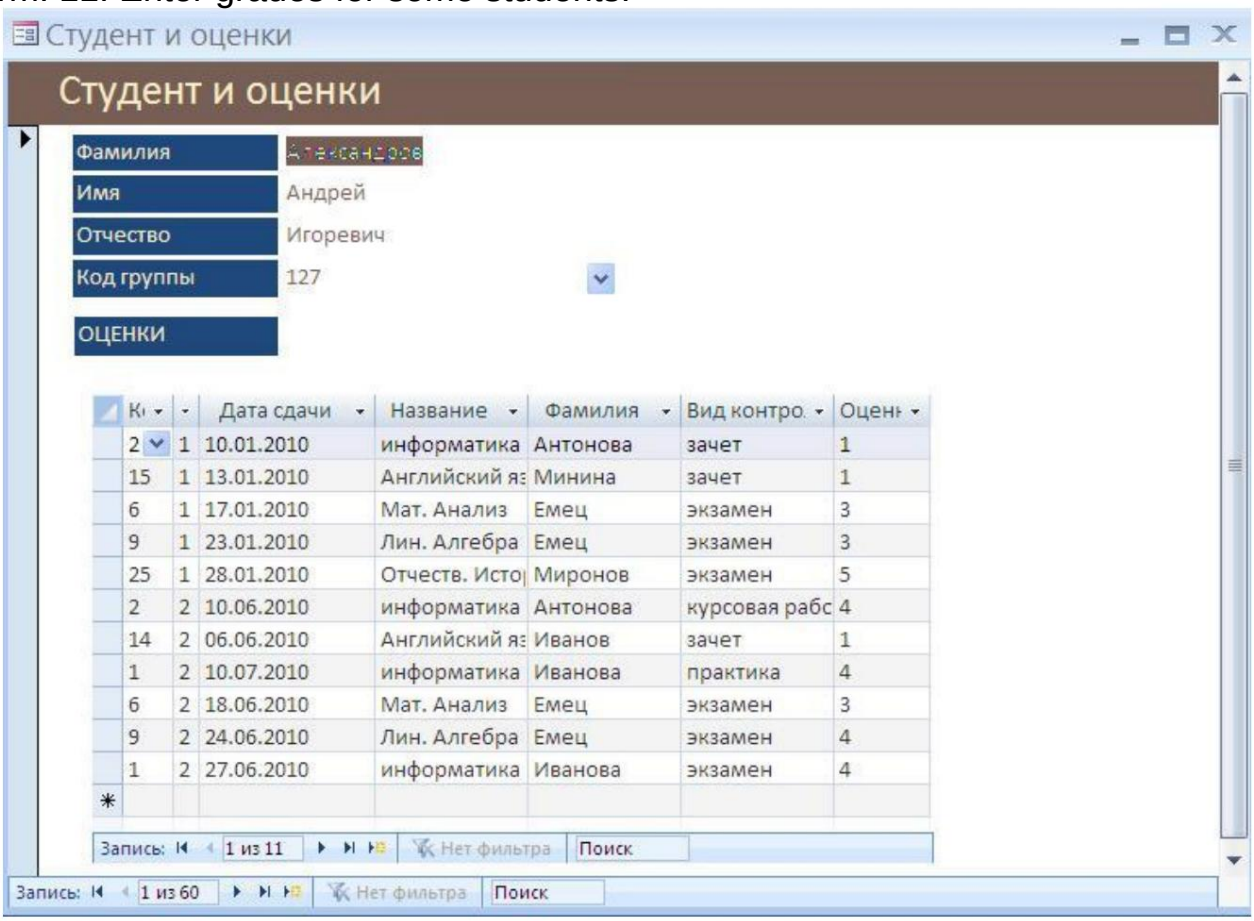
Create a composite form *Student and Grades* (Fig. 2). This form is intended on to view and enter grades for each student.

Work technology

1. In the Database Navigation pane, select the Forms window. 2. Select the Form Wizard mode (on the ribbon, Create tab/Forms group/Other forms button/select Form Wizard from the list).
3. On the first step of the wizard
   - from the *Student* table , select the fields *Last Name, First Name, Patronymic, Group Code;* • from the *Assessment* table , select the fields *PD Code, Semester, Submission Date;* • from the table *Teacher-Discipline Discipline Code, Teacher Code la;*
   - from the table *Assessment Type of control, Assessment.* Further.
4. At the next step of the wizard, select the type of data presentation. By default The wizard suggests creating a main form using data from the ***Student*** table and a subordinate form according to the ***Evaluation*** table (the Subform switch is selected). You should agree with these guidelines. Further.
5. In the next step, select the appearance of the subform - tabular. Further.

6. In the next step, select a design style. Further.
7. In the next step, enter the names of the forms: main – *Student and grades,* subordinate – *Student and grades (sub).* Ready. The form will open in data view mode. 8.

Review how the data is arranged on the form. Close the form. 9.
Make sure that TWO more newly created forms appear in the list of forms. 10.
Edit the dimensions of the table of the subordinate form, the dimensions and location of objects in the main
form. 11. Enter grades for some students.



Rice. 2. Student Form and Grades

Task 4: Create a subform in Design view

Create a subform in *the Teacher-Form* form that allows you to view the disciplines taught by each teacher. Adjust the appearance of the form in design mode.

Working technology

1. Open *the Teacher-form* in design mode. 2. Increase the size of the data area to insert the subform. 3. On the Design tab, in the Controls group, select a tool.

ment Subordinate form. 

4. Draw a rectangle over the free space in the data area. The Subform Wizard will start working.

5. In the first step, check the Available tables and queries radio button. 6. In the next step, select *the Code* field from *the Teacher-Discipline* table
disciplines.
7. In the next step, leave the proposed settings unchanged. 8. In the next step, enter the name of the subform - *Taught Disciplines*
pliny (podch).
9. Complete the wizard. Ready. 10.
Review the resulting form. You cannot enter data into it YET, because... For the main form, properties were set that provide only data viewing (LR3, task 4). 11. Edit the sub and main forms. Set properties
that allow you to change, delete, or add data to the form.

Task 5: Create nested subforms

Create a form to view information about student performance by group.
memory

This form will have two subforms nested within each other. The main form should be created based on the ***Group table.*** The first subordinate form is based on the ***Student table.*** The second subform will be created based on the ***Evaluation*** table and nested in the first subform (Fig. 3).

How it works Creating
the main and first subforms 1. Create a simple form
with fields arranged in one column according to the *Group table.* Call it *Group Assessments.*

2. Open the created *Group Ratings* form in design mode. 3. Increase the size of the data area as much as the visible part of the screen allows. 4. Go to the Controls group (Design tab). 5. From the Toolbox, select the Subform tool. 6. Draw a rectangle over the free space in the data area. The Subform Wizard will start working.

7. In the first step, select the Available tables and queries radio button. 8. In the next step, select *the Last Name, First Name, Report* fields from the *Student* table
quality
9. In the next step, leave the proposed settings unchanged. 10. In the next step, enter the name of the subform – *Group Grades*
(Student sub). Ready.

Review the created form. The subform has a tabular form. For further work, it is necessary to change the type of the subform, because It is impossible to insert a subform into a table form.

Change the appearance of a subform
1. Close the main form and open the subform in design view. 2. Open the Form Properties window (see Workshop 6.4.3, task 4).

3. On the Layout tab, set the Default Mode property to Single form.
4. Place the inscriptions and fields *Last Name, First Name, Patronymic* in the data area. 5. Increase the size of the data area to insert the next subform. We.

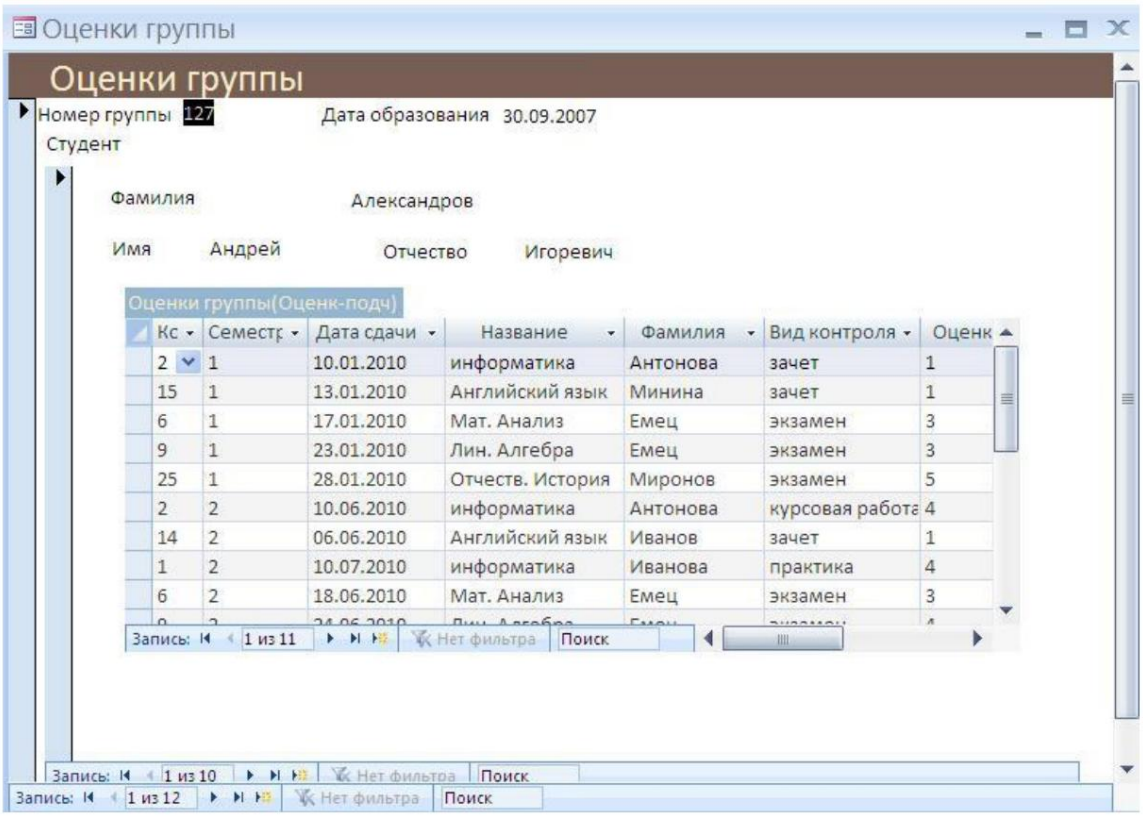
Creating a second subform

1. From the Toolbox, select the Subform tool. 2. Draw a rectangle over the free space in the data area. The Subform Wizard will start working.

3. In the first step, check the Available tables and queries radio button. 4. In the next step, select

- from the *Assessment* table , select the fields *PD Code, Semester, Submission Date;* • from the table Teacher-Discipline Discipline Code, Teacher Code; • from the table *Assessment* Type of control, Assessment. Further. 5. In the next step, leave the proposed settings unchanged. 6. In the next step, enter the name of the subform - *Group Grades (Grades-ki-subch).*

Ready. 7. Close *the Group Grades (Grades-sub)* form and open the main form in re-viewing mode. 8. Find the buttons for moving from record to record for the main form, the first sub-form and the second sub-form. 9. Look at any shortcomings in the location and size of the object and editing edit them, first in subordinate forms, then in the main one.



Rice. 3. Group Evaluation Form

Task 6: Creating a copy of a compound form

A compound form contains data from two (or more) tables that have 1:M relationships. In this case, the main table contains data from the table from the side of connection 1, and the subordinate table contains data from the side

of connection M. For compound forms, the following levels of data access can be provided:

- full access (adding, changing, deleting) to data in both main and subforms;
- only viewing the data of the main form and viewing and entering data of the subordinate form;
- only viewing data from the main form and only entering data from the subordinate one forms;
- only viewing the data of the main and subforms. Composite

forms with different levels of access must be created in the database. To do this, you need to create a copy of the form with a different name and set its access properties.

Create a copy of the Students-Evaluations composite form and set your own for it tion ONLY VIEW data.

How to work 1. In the transition area, go to the Form window.
2. Select *the Student and Grades form.* 3. Copy *the Student and Grades* form to the clipboard. 4. Paste the copy and name it *Student and Grades(view).*
5. Copy *the Student and Grades(sub)* subform to the clipboard. 6. Paste a copy. When performing the paste, enter the new form name *Student and Grades(sub-view).*

7. Open the *Student and Grades form (view).* It contains a subform. The data source for the subform is STILL the *Student and Grades(sub) form.* You need to change the data source.
8. Switch to design mode. Select a subform as an object (yellow markers). Right-click on any subform selection marker and select Properties. The properties window for the subform as an object will open **(ATTENTION:** This is not the properties window for the subform as such). 9. Go to the Data tab. 10. In the Source Object line, select *the Student-Grades form (subject to viewing).* Close the subform properties window. 11. Open the properties window of the main form. For the properties Allow editing, Allow deleting, Allow adding, set the values to No.

Task 7. Setting the VIEW ONLY and DATA ENTRY ONLY properties for compound forms

If the main form does not contain all the fields from the corresponding table, then when When trying to enter new data, a conflict may occur, since in this case some required fields of this table may not be filled in. Therefore, in compound forms, as a rule, data is not entered into the main table, but only into the subordinate one. Therefore, in a composite form, it is necessary to only view the data of the main table (from the side of connection 1) and enter data into the subordinate form (from the side of connection M). In task 3, a composite form *Student and Grades*

was created , in which the default properties were set to view, change, delete and add grades received by a specific student. The same form allows you to enter some data about the new student, but this cannot be done because

- firstly, not all fields from the *Student table are included in the form;*
- secondly, according to the life cycle of the database, data about the student is entered into the database upon his admission to the institute, i.e. in the *Student Form,* and grades are entered only after the session, i.e. some time later. Therefore, by the time grades are entered, data on all students should already be recorded. carried.
- thirdly, the form does not include some fields declared required and therefore, if they are not filled in, the environment simply will not allow saving this data. If you prohibit adding, changing

and deleting data in the main form, then these settings will automatically apply to the subform. But this doesn't suit us. There is another way to ensure that the data is view only. For the *Student and Grades* form , you

need to ensure that you can view data about student and entering grades.

Work technology

1. Open *the Student and Grades* form in design mode. 2. Right-click the Last *Name* field in the main form. From the context menu, select Properties. The properties window for the "field" object will open. 3. On the Data tab, find the Locking line and set it to

Yes.

4. Do the same steps for other fields of the main form. 5. Go to view mode and make sure that you cannot enter data in the fields main form.

Task 8. For independent work

For the *Group Evaluation* composite form , provide only VIEW data for the main form and the subform *Group Evaluations (Student-sub).*

Task 9. Calculated fields in forms

Very often you need to calculate totals for a group of records of a subordinate form.

To calculate the total value for a group of records, you can use the form mu containing a subordinate form. The main form and subform are created based on tables with a **one-to-many relationship.**

Construct a calculation field in the *Group Grades form,* in which the average grade of each student is calculated based on the grades received during the training. nia.

Work technology

1. Open *the Group Grades (Grades-sub)* subform in con- constructor.
2. Find the title of the form comments area. The notes area may have zero dimensions. 3. Increase the size of the notes area. 4. In the comments area of the form, create a new field (Field tool in the Controls group (Design tab). 5. Open the Field Properties window and select the Data tab. 6. In the Data line, enter the formula =Avg([Rating]) either **manually** or using the expression builder (the **Avg** function means **Average). Note:** The technology for creating formulas using the expression builder is described

rank below.

7. On the Other tab, enter the field name – *Average.* Close the properties window.
8. Change the label for the field – Medium.
9. Create another calculation field with the formula **=Count([Estimate]),** which counts the number of student grades. Name this field and the corresponding inscription *Quantity.*
10. Go to form view mode. Since the form is tabular view, the calculation results are not displayed. Close the form.
11. Open *the Group Grades (Students-sub) form,* which is the main form in relation to *the Group Grades (Grades-sub)* form in design mode. 12. In the data area of the main form, create a new field. In the Properties window fields on the Data tab, in the Data line, enter the formula

=[Group Grades(Grades-Sub)].[Form]![Average], which is

a link to the *Average* calculation field of the Group Grades(Grades-Sub) subform . To do this, you can use the expression builder.

13. Enter an explanatory text for the field – *Average rating.* 14. Create another field – *Number of ratings* – with the formula

=[Group grades(Grades-sub)].[Form]![Quantity],

which is a link to the calculated field Quantity of the subordinate form Estimates (sub) . 15. Go

to viewing mode and look at the results of the calculation my field.

16. Open the main Group Ratings form and see how this calculated field is displayed there.

Create a formula using the Expression Builder Formula

with a built-in function To create a formula that contains a built-in function, for example, =Avg([Evaluation])

1. Click on the expression builder button located at the end of the line Data.
2. In the upper area of the window, type the “=” (equals) sign. 3. In the left pane of the window, select Functions/Built-in functions.
4. In the middle area of the window, select Statistical. 5. In the right pane, double-click the Avg function name. She will appear at the top of the window. 6. Erase the formal argument between the parentheses. 7. In the left area of the window, select Forms / Loaded Forms / Group Grades.
8. In the middle area of the window, double-click the Rating field. 9. Close the Expression Builder. The formula appears in the Data line.

Formula with a reference to another database object

To create a formula that contains a reference to another database object, e.g.

=[Group grades(Grades-sub)].[Form]![Average]

1. Click on the expression builder button located at the end of the line Data.
2. In the upper area of the window, type the “=” (equals) sign. 3. In the left area of the window, double-click to select the sequentially nested items Forms / Loaded forms / *Group grades (Student-sub) / Group grades (Grades-sub).*
4. In the middle area of the window, double-click the *Average field.* 5. Close the Expression Builder. The formula appears in the Data line. **Note.**

The environment automatically discards square brackets if the object name consists of one word.

In subforms that have a tabular view of the data, you can also create a calculated field in the table. For example, the table indicates the price and quantity of an item, but you need to create a Cost field in which the corresponding value is calculated. The technology for creating the field is the same as described above. BUT! The calculated field is created not in the comments area, but in the form data area. **Note!** Formulas in

calculated fields can contain links
both to fields of the same database object and links to other objects.