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(Eds.)

International Workshop on Cyber Hygiene
CybHyg 2019

Kyiv, Ukraine

November 30, 2019

CEUR-WS.org/Vol-2654/preface.pdf

Gnatyuk S., Fedushko S., Hu Zh., Odarchenko R., Syerov Yu., Peleshchyshyn A., Korobiichuk I. (Eds.): International Workshop on Cyber Hygiene (CybHyg-2019), Kyiv, Ukraine, November 30, 2019, CEUR-WS.org, online.

This volume represents the Proceedings of the International Workshop on Cyber Hygiene (CybHyg-2019) co-located with 1st International Conference on Cyber Hygiene and Conflict Management in Global Information Networks (CyberConf 2019) held in Kyiv, Ukraine, November 30, 2019.

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Preface

It is our pleasure to present you the proceedings of International Workshop on Cyber Hygiene (CybHyg-2019), Kyiv, Ukraine, November 30, 2019.

CyberHygiene-2019 is intended to attract researchers with a strong background in the field of on security and privacy of critical applications, ICT infrastructures and systems, management of cyber incidents, warfare and conflicts, and social engineering and identity theft protection techniques.

The main workshop sections:

- Security and Privacy of Critical Applications
- ICT Infrastructures and Systems
- Management of Cyber Incidents, Warfare and Conflicts
- Social Engineering and Identity Theft Protection Techniques

The CybHyg-2019 joined scientists from Ukraine, Poland, China, Georgia, Germany, Armenia, Kazakhstan, Belarus, North Macedonia, Hashemite Kingdom of Jordan, Pakistan, Kingdom of Saudi Arabia, Yemen, Nigeria, India, Portugal, Republic of Iraq, South Africa together with practical doctors.

The language of CybHyg-2019 workshop is English. The workshop took the form of oral presentations of peer-reviewed regular papers.

The workshop would not have been possible without the support of many people. First of all, we would like to thank the program and organization staff, the members of the Technical Program Committees and external reviewers for their excellent and tireless work. We sincerely wish that all attendees benefited scientifically from the workshop and wish them every success in their research. It is the humble wish of the workshop organizers that the professional dialogue among the researchers, scientists, engineers and doctors continues beyond the event and that the friendships and collaborations forged will linger and prosper for many years to come.

2019

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CEUR Workshop Proceedings
http://ceur-ws.org
ISSN 1613-0073

Vol-2654
urn:nbn:de:0074-2654-4

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CybHyg 2019
Cyber Hygiene

Proceedings of the International Workshop on Cyber Hygiene (CybHyg-2019)
co-located with 1st International Conference on Cyber Hygiene and Conflict Management in Global Information Networks (CyberConf 2019)

Kyiv, Ukraine, November 30, 2019.

Edited by

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2020-08-10: submitted by Solomiia Fedushko, metadata incl. bibliographic data published under Creative Commons CC0
2020-08-19: published on CEUR-WS.org |valid HTML5|

Study on 1C Typical Configurations and the Problem of their Modification

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Abstract. The article gives an overview of the 1C program structure, configurations available to Ukrainian users, the product versioning and modifications that took place over its history. It has been made a conclusion on the fact that 1c has a monopoly position in the market for accounting automation software products in the post-Soviet countries due to the fact that there are no equally sophisticated alternatives tooled for the national standards. However, it has been figured out that despite the fact that the 1c developer offers a wide range of typical and industrial configurations addressing commonly arising business needs, a variety of routine issues requires program code modification implementation. One of the most frequent changes made to a typical configuration is connected with the fact that the typical configuration standard documents do not fit companies` needs. The paper addresses the algorithm of adding data and its output in the typical configuration standard form to make information display more convenient for different users (accountants, economists, management, storekeepers, logistics experts, etc) to optimize workflow.

Keywords: 1C, versioning, typical configuration modification.

1 Introduction

The innovative economy is characterized by the active use of information technology in business where companies need to implement efficient accounting, optimize costs, and standardize computing equipment management for all services and projects [1]. The 1C program is intended for accounting and the management of all aspects of enterprises` activity. The peculiarity of the product lies in the fact is that it is mainly operated in the FSU region offering value-for-money features and functions – foreign systems of this class are usually more expensive (SAP, MS Dynamics NAV, Oracle E-Business Suite, etc.). The key factor contributing to the program competitiveness in quite a large number of countries is the availability in the system of accounting and tax modules that are developed in accordance with corresponding national standards.

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CEUR-WS.org/Vol-2654/paper22.pdf

Consequently, relatively low costs for implementation and support and the fact that it is tooled for a particular country`s needs result in its almost monopolistic position in the market for accounting and management automation facilities in the former Soviet countries – 1C products are available in localized versions for the following 14 countries: Russia, Belarus, Ukraine, Kazakhstan, Kyrgyzstan, Tajikistan, Georgia, Moldova, Uzbekistan, Romania, Latvia, Lithuania, Estonia, and Azerbaijan [2]. Despite a great amount of available information on the program operation, it is characterized by the lack of details and mostly non-applicable nature. Thus, apart from giving a comprehensive overview of a number of important aspects in terms of the product structure and development, the paper presents an attempt to address widespread problems connected with one of the most frequently arising needs to modify the program.

2 1C program: structure of the software system

As for the program structure, 1C is the combination of a platform and an application solution (configuration), a database (data storage location), and a user interface.

The platform is a tool underlying the accomplishment of two essential tasks – solution development and user activities in the 1C program. Without the platform, no configuration can be executed (the application solution is installed on the platform), while the platform can operate without configuration. Access to changing the platform is granted only to 1C developers – the similarly named company. The latter implies the fact that a 1c implementation specialist at an enterprise cannot make changes to the structure of the program platform [3].

Configuration or an applied solution is a part of the 1C program "installed" on the platform that serves as a tool to solve a specific problem. There are many configurations but there is a single platform [3].

1C provides a number of standard configurations. Currently, there are two big groups of available options – typical and industry configurations. As the name suggests, typical solutions are universal to be used at any enterprise. In Ukraine, the development company offers the following typical configurations:

- Accounting
- Salary and personnel management
- Management of a commercial enterprise
- Management of a production enterprise
- Small business management [4,5].

Industry configurations are field-specific and ready-to-use solutions. Their functionality is limited to and shaped for specific industry requirements. It serves as a big advantage, since such solutions do not have to be modified (as, for instance, box version configurations already contain basic document templates for work, for example, as in 1C for stores), and due to this fact software implementation and operation costs will be considerably reduced. Besides, for industry configuration development, all the accumulated experience in a particular sphere is used. It is also taken into account the norms of current legislation, requirements and specifics of accounting, and tax maintenance.

Ukrainian users have the opportunity to buy and implement the following specialized solutions: software products for fuel and energy industry production automation (MES Production Activity Control); software for engineering data and research management (PDM, MDM); repair management software (CMM, EAM -TOIR Management of equipment operation and maintenance 2 CORP; TOIR equipment operation and maintenance); agricultural software (agricultural enterprise management for Ukraine; agricultural enterprise accounting for Ukraine; accounting for grain elevators, mills, and compound feed mills in Ukraine; selective breeding of animals and pig breeding); software for commerce, warehouses, logistics and transport (pharmacy for Ukraine; clothing and a shoe store; appliance and communications equipment store; motor transport management. Ukrainian standard); customer relationship management software; management and financial accounting software (manager; target-specific management and key performance indicators); software for the food service and hospitality industry; software products for beauty salons, SPA, and fitness clubs; software for the construction, housing and utilities sector (building organization management for Ukraine; building contractor 4.0. Financial management; building organization accounting; building contractor 3.0. Construction operations management; accounting in apartment building co-owner associations and housing cost calculations; software for information technology management (ITIL Enterprise information technology management) [7].

However, 1c programmers can generate their own configurations using the designer. It`s worth noting that it is an easy-to-use 1c subsystem. When programming, there is a large number of tips, a powerful built-in assistance system, highlighted language constructs (red to highlight procedures and functions; blue for the programming code itself; green for comments; brown for the partitioning of the program code compilation into server and client), error control, modularity and much more.

In general, the program operation principle is the following: initially, the application solution is developed in the developer mode (Designer), since the program features a full-fledged development environment; after the development stage, ordinary users can enter the program and use obtained outcomes in the form of an application solution. Thus, we may conclude that the platform without configuration is useless, just as a 1C configuration is not a complete 1C program.

There are two commonly used ways of interaction with the system for users. A thick client is the first option implying program execution in a non-real-time application mode. The second alternative is a thin client when the program is run in the controlling application mode. The latter is considered to be more up-to-date (since it can be used for adaptation to mobile platforms) and more robust as it requires less time for data processing. It is also available a web-client interface. It operates through a web-browser. In fact, it`s not cloud technology in the full sense of that word, because a database server is deployed in the territory of a company. It is done for safety reasons: if to deploy it on an online medium, there are some cybersecurity concerns, for instance, the risk of data loss. Since version 8.3, a new type of interface has been introduced into the system, the so-called "Taxi", which brought the system closer to the standards of web interfaces.

1C 8.3 stores data on the database. The 1C program can work both in conjunction with a third-party DBMS, and with its own embedded database. The latter is referred to as “file”, its biggest drawback is the fact that it is designed to work with up to ten users only. There are also client-server databases based on SQL technology intended for more than 10 users.

3 A brief overview of 1C versioning

As it was mentioned before, the 1C program is a product of the 1C company designed to automate enterprises. It has been in the market for almost 20 years with its history dating back to the early ninetieth. The first 1C versions (3.0, 4.0, 5.0.) were released to run on DOS. They laid the foundation of business transactions being reflected in the form of “documents”, as well as the idea of a “print form”. The early versions also had a prototype of an embedded language to edit transactions. In 1995 it was released the next version of 1C enterprise - 6.0 compatible with Windows OS. It became a real breakthrough in accounting automation and perhaps the reason why most of that time accountants had to acquire computer literacy skills. A new version for Windows 95 - 1C 7.0 launched in 1998 was the next important step in the product history [6]. The upgraded version was characterized by compatibility with MS SQL, the availability of a full-fledged designer and a debugger.

And in 2002, it came out the next generation of 1C software- 8.0. Its primary differentiating feature in comparison to the earlier versions was improved performance. The latter was brought about by the perspective competition with global giants in the field of enterprise resource planning. The proposed product featured such innovations as a unique data query language, an assembly system, and much more. Later there was version 8.1, which differed from the previous one in a completely redesigned client-server interaction system, the availability of web services, an improved access control system, etc.

With the release of platform 8.2 new concepts such as a thin client (work through the Internet), a web application acquired currency in the field of 1C. From then on the system is able to operate stably on narrow communication channels. Version 8.2 also introduced to its users a new metadata object - “External data sources” using which it is possible to directly connect to third-party sources: SQL databases, dbf and excel files, etc [8].

Currently, 1C developers are trying to keep up with new trends - modern gadgets and clouds. At the moment, the latest software version is 8.3. Using this platform, there is a possibility to create a separate mobile application that can easily be executed on Android or IOS [8].

However, despite the fact that in Ukraine version 8 became available back in 2008, in 2017 about 10% of Ukrainian companies from the total number of 1C program users still opted for version 7.7 [9].

An important point to note comparing versions 7.7 and 8 is that one of the illusory advantages of the former is lower price (not least because of the fact that 8.0 and more recent versions are subject to frequent updates) and its compatibility with earlier

Windows OS versions (it runs on Microsoft Windows 95, 98, NT 4.0, 2000, XP) as well as SQL data management systems (Microsoft SQL server 6.5, 7.0, 2000) which can be a decisive factor for some users (mostly state enterprises, or small businesses not centered around innovations) still working with older system software running well on slow computers in the CIS region. However, there is a serious problem connected with the absence of Microsoft software support and the fact that a part of 1C 7.7. program products are no longer available on the market starting from July 1, 2011 (such as 1C accounting 7.7 for SQL; 1C: paycheck and personnel 7.7 for SQL; 1C: commerce and storage 7.7 for SQL; 1C integrated supply 7.7 for SQL). What it means is that in fact all bugs and problems can be eliminated by the long process of trial and errors since older version users are left alone with such glitches and if there are any they have to fix them on their own. Thus, from our perspective, reliance on version 7.7 is not an option at enterprises where there is more than 40 people employed (because of slow processing speed as well). What`s more, a lot of processes and operations in the older version are not automated and require manual entry. A strong point of 8.0 version also lies in the fact that it offers ready application solution for a particular business type (a fitness-club, milk processing factory, etc).

4 The problem of typical configuration modification

Typical configurations don't fully satisfy companies' needs in accounting. Thus, they require increment and perfection to meet such needs and to become an effective tool for working process optimization [9]. In fact, code modification is 1c programmers` main task that generates a high demand for the profession representatives in the market. The fact that the program is not completely adapted to target users` needs also contributes to the actuality of conducting research on the problematic aspects of the software use and their solutions.

The authors conducted the research on the practice of "management of a production enterprise" usage. Based on its results, it has been made a conclusion that most of challenges faced by users are connected with the need to modify documents in accordance with the company`s needs. Since all data are reflected in a tabular form, there often arises a need to expand spreadsheets by changing configuration objects` modules and by adding additional document attributes. For this purpose and to facilitate an enterprise`s operation, the typical configuration "management of a production enterprise" contains more than 140,000 editable configuration objects.

Let us consider what steps are necessary to achieve this goal by the example of the "order to a supplier" document. Initially, a user can see the data arranged in the following way.

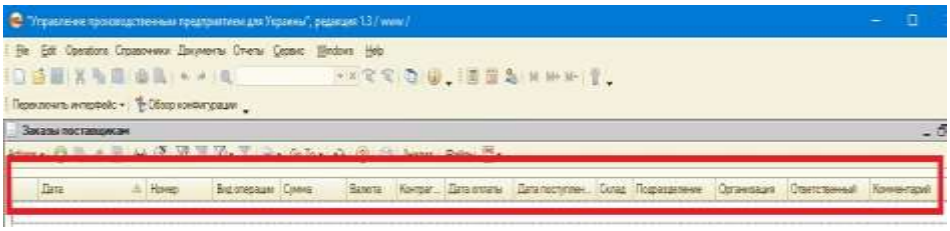

Fig. 1. Bare configuration.

As we can see, fig. 1 illustrates the user session window with a bare configuration. As can be seen, in the given example the typical document form consists of the following tabular sections: date, number, operation type, sum, currency, contractor, date of payment, receipt date, warehouse, department, organization, person in charge, comment.

In order to enhance the list of the available parameters and to modify the form accordingly, a 1c programmer has to open the designer and among the list of configuration object groups select the configuration object “Documents” (Fig.2).

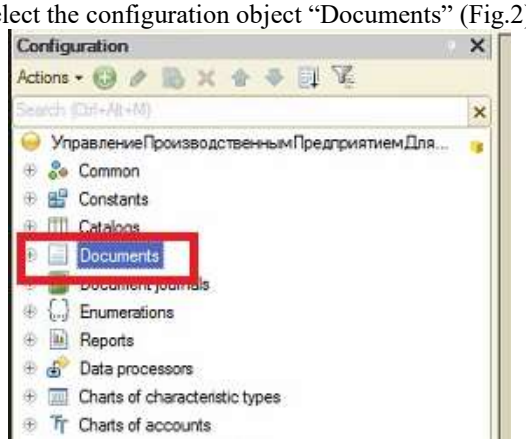

Fig. 2. List of configuration object groups.

By clicking on the corresponding menu item, a programmer opens the list of standard documents peculiar to the given typical configuration “management of a production enterprise”. The program offers more than 300 standard documents with different functionality. Among the long list of the available forms, we need to choose the document of interest (order to a supplier) (Fig.3).

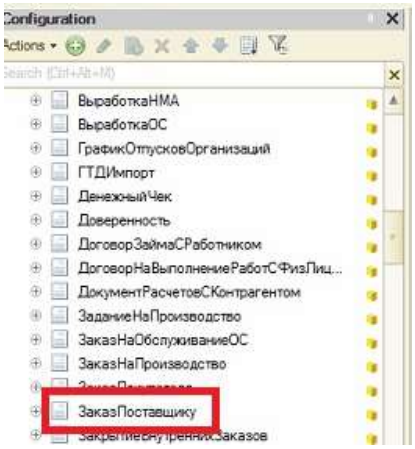

Fig. 3. List of available documents (configuration objects).

In order to add a new attribute, a programmer has to create a cell for data input. For this purpose, we select the data option on the left-hand menu, click on the plus symbol opening the “properties” window (Fig. 4) where it is necessary to specify all required parameters.

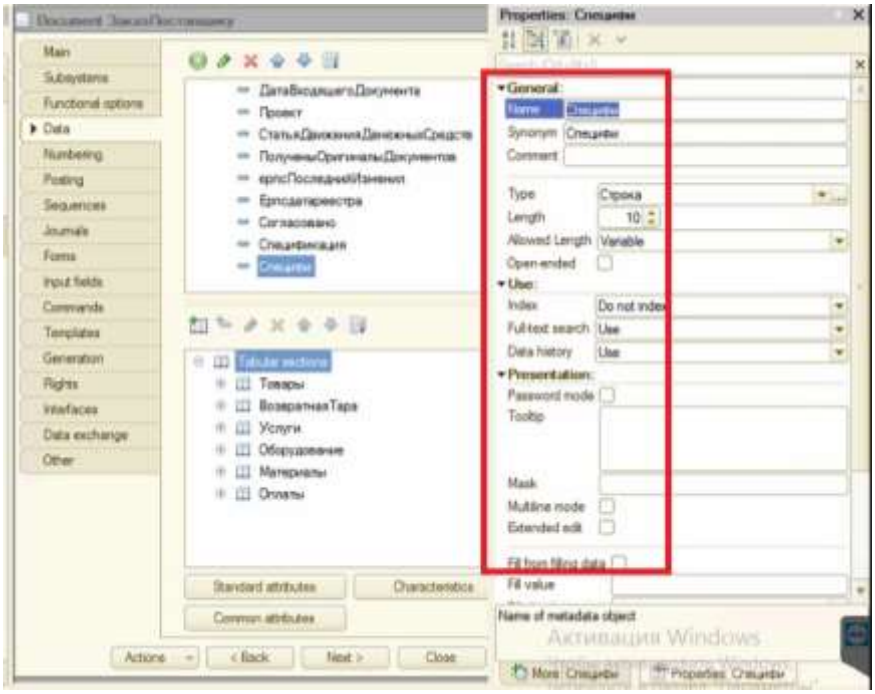

Fig.4. Adding attribute properties.

In Fig. 5 it is shown the added attributes to the standard document of the given typical configuration where the necessary data will be displayed. As can be seen, in our

example these attributes are the following: incoming document number, incoming document date, project, funds flow item, received original documents,

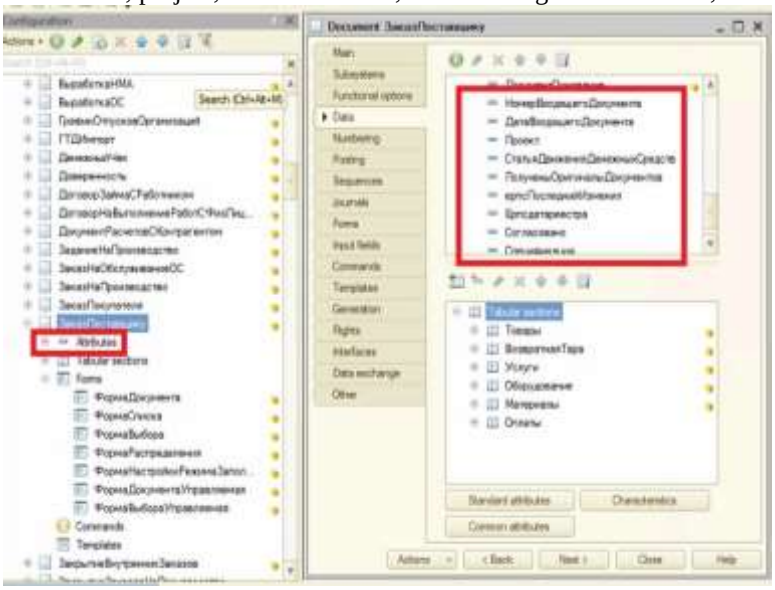

Fig. 5. Added attributes.

In Fig 6 there are document internal components, namely the mechanisms for data input and output to a database. In 1c they are referred to as “forms”. In order to modify an object to integrate attributes into a document, it is necessary to select the list form.

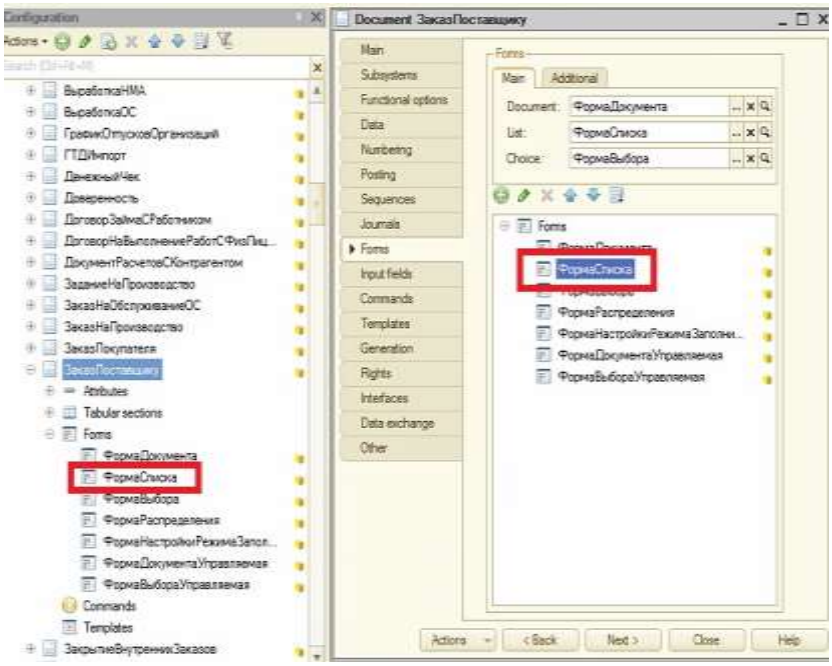

Fig 6. Document internal components.

In Fig.7 there are created attributes implemented in the form for the subsequent output and processing of the calculated data.

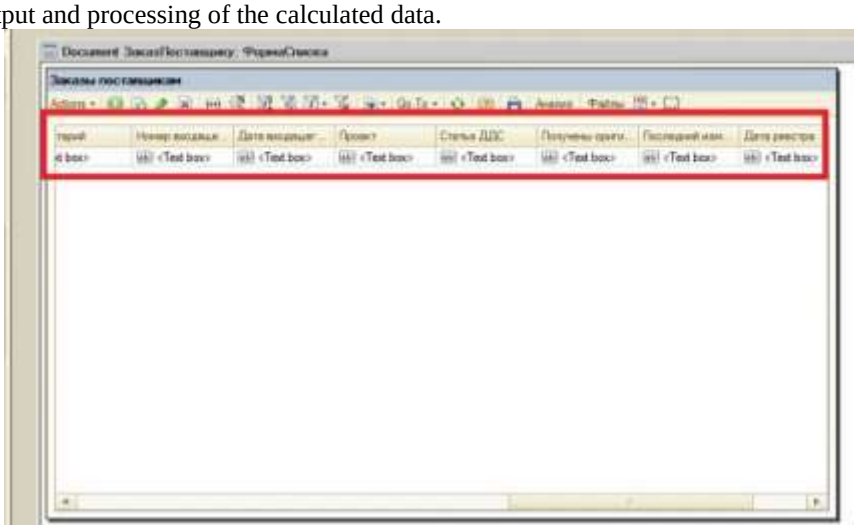

Fig.7. Adding the created attributes to the form.

In Fig. 8 it is shown the integrated module containing the program code. With the help of the available procedures and functions and various algorithmic expressions, it is realized the adding of the necessary attributes, their configuration and management.

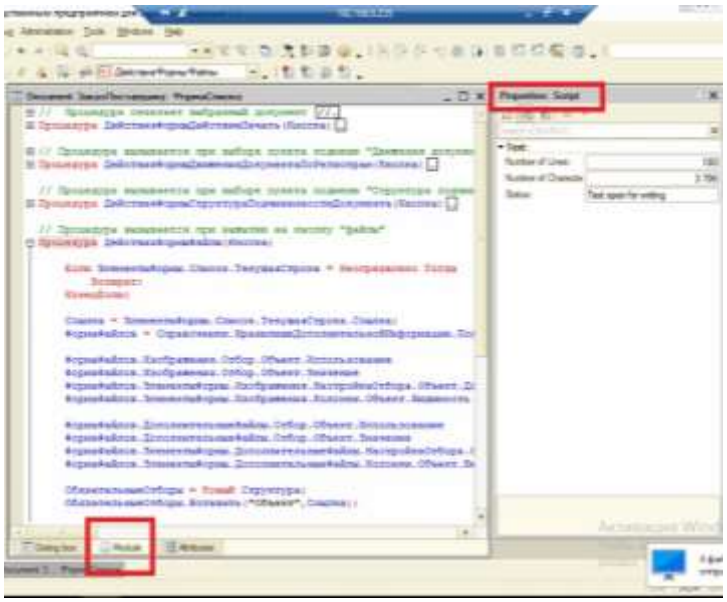

Fig. 8. Module of document list form.

Finally, Fig. 9 represents the way how the results of a 1c programmer`s manipulations in the designer are shown to a user.

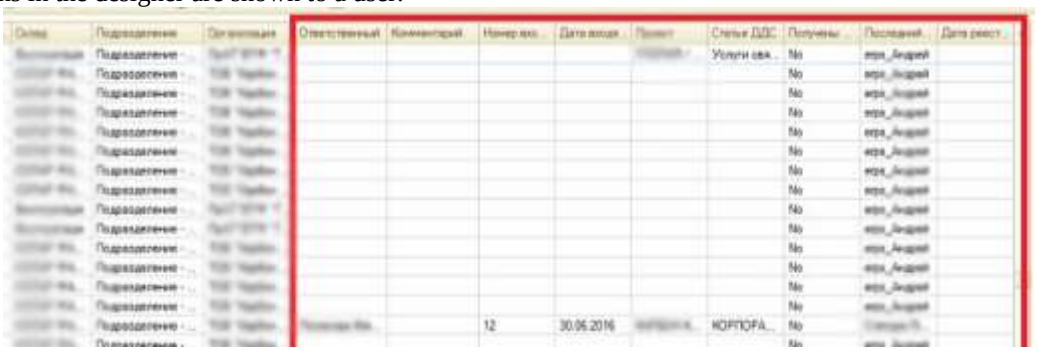

Fig. 9. Configuration modification results.

5 Conclusion

As can be seen, 1C is a useful tool to optimize workflow. Users in the program work with 1C forms. What`s more, what users see on their screens is 1C forms only. Therefore, from the point of view of the convenience of the program use, it is one of the most important elements. In the article, it is given the algorithm of linear data output modification with the help of the document list form based on Russian command syntax. It is worth noting that in the program English one is also supported.

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