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DEVELOPMENT OF AN AUTOMATED SYSTEM FOR DETERMINING THE "ID OF THE COMPETITIVE PROPOSAL" OF THE SPECIALTY (EDUCATIONAL PROGRAM)

The paper presents the results of the implementation of automated systems and the definition of the "ID of the competitive proposal" of the specialty (educational program) depending on the selected criteria, namely: educational level; admission base; specialty; form of education; the deadline for submitting documents allows you to choose CP in two versions: "Dates depending on the CP" – the search by date is not performed and all available competitive proposals are displayed in accordance with other criteria and "At the moment" – a search for competitive proposals that are available at a moment is added to the search criteria, which makes it possible to determine the "ID of the tender proposal". A flowchart of the algorithm has been developed that implements the above-described actions of automated systems and the definition of the "ID of the competitive proposal". The system has an adaptive design, and can be downloaded to various mobile devices, which will allow you to have information at the fingertips. Also, the system has a short reaction time, reduces the load on the server (since after receiving information from the database, it is processed on the user's computer). The automated system for determining the "ID of the competitive proposal" was posted on the <https://www.vstup.org/konkurs> portal, and the link to it on the site <https://iino.knuba.edu.ua/>. The system was tested during the admission campaign 2022 in the separate structural section and "Institute of Innovative Education of Kyiv National University of Construction and Architecture", confirmed its performance, the number of users who used the system was 1298 people, which is equal to 92% of the total number of applications for admission.

Keywords: admission campaign, ID of the competitive proposal, automated system, institutions of professional pre-higher education, institution and higher education, algorithm.

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РОЗРОБКА АВТОМАТИЗОВАНОЇ СИСТЕМИ ВИЗНАЧЕННЯ «ID КОНКУРСНОЇ ПРОПОЗИЦІЇ» СПЕЦІАЛЬНОСТІ (ОСВІТНЬОЇ ПРОГРАМИ)

В роботі наведено результати впровадження автоматизованої системи визначення «ID конкурсної пропозиції» спеціальності (освітньої програми) в залежності від обраних критеріїв, а саме: освітній рівень; база вступу; спеціальність; форма здобуття освіти; термін подачі документів дозволяє обрати КП в двох варіантах: «Дати в залежності від КП» – пошук по даті не виконується і виводяться всі доступні конкурсні пропозиції відповідно до інших критеріїв та «Вданий момент часу» – в пошукові критерії додається пошук по конкурсних пропозиціях які доступні у даний момент часу, що дає можливість визначити «ID конкурсної пропозиції». Розроблена блок-схема алгоритму, що реалізовує описані вище дії автоматизованої системи визначення «ID конкурсної пропозиції». Система має адаптивний дизайн, та може бути завантажена на різні мобільні пристрої, що дозволить завжди мати інформацію під рукою вступника. Також система має малий час реакції, зменшує навантаження на сервер (оскільки після отримання інформації з бази даних її обробка відбувається на комп'ютері користувача). Автоматизована система визначення «ID конкурсної пропозиції» була розміщена на порталі <https://www.vstup.org/konkurs>, а посилання на неї на сайті <https://iino.knuba.edu.ua/>. Система пройшла опробування під час вступної кампанії 2022 в Відокремленому структурному підрозділі «Інститут інноваційної освіти Київського національного університету будівництва і архітектури», підтвердила свою працездатність, кількість користувачів що користувалися системою склала 1298 осіб, що дорівнює 92 % від загальної кількості поданих заявок на вступ.

Ключові слова: вступна кампанія, ID конкурсної пропозиції, автоматизована система, заклади фахової передвищої освіти, заклади вищої освіти, алгоритм.

Staging problems

During the admission campaign, institutions of professional pre-higher education (hereinafter referred to as IPPE) or higher education institutions (hereinafter referred to as HEIs) have their own unique admission conditions (Admission Rules), which are regulated by the Procedure for admission to study for higher education in 2022 [1], the Procedure for admission to study in institutions of professional pre-higher education in 2022 [2], and the Procedure for submitting and reviewing applications in electronic form for participation in the competitive selection to higher (professional pre-higher) education institutions of Ukraine in 2022 [3]. One of the components of the

Admission Rules are: the deadlines for accepting applications and documents, competitive selection and enrollment in each institution, depending on the type of competitive proposal (hereinafter – CP) (the number of places for admission of applicants to a certain level of higher education, educational program (educational programs), form of education, course, list of competitive subjects and creative competitions, term of study on the basis of the acquired educational level or degree (educational qualification level). There are open, fixed and non-budgetary competitive proposals" [1-3]), which in educational institutions (hereinafter – EI) may be the same and vary (there are several stages of the admission campaign (applies only to non-budget competitive proposals)) which complicates the selection and of the proposal when submitting and applying for admission in electronic form, since different EI have different names of the CP and several stages of the admission campaign (from one – there is no option of choosing a CP (it is the only one in the electronic cabinet), two or more – detailed identification of the CP is required, namely its ID), which requires additional analysis of the rules for admission to them. Given the large number of different variants of CP in the EI, this problem is not trivial and requires the use of IT-technologies in its solution.

Analysis of recent sources

In [4], the system for determining the specialty of training based on the results of the EIT was analyzed, which allowed the applicant to reduce the time for determining the specialties of the selected EI. Now, a <https://vstup.edbo.gov.ua/offers/> system has been developed [5], which provides information on CP, but does not provide their ID, which makes it impossible to identify them in an electronic cabinet.

The aim of the work is the development of an automated system for determining the ID of the competitive proposal of the specialty (educational program).

Presentation of the main material

During the admission campaign in different IPPE and HEIs, admission usually takes place in several stages (depending on the Admission Rules adopted in the EI, vary from one to several, for convenience, an automated system for determining the "ID of the competitive proposal" of the specialty (educational program) has been developed [6].

The description of the choice of IPPE and because the university is not presented, but the information about the cities (regions) of Ukraine is stored in the Region table, and information about the EI in the Universities table of the Education.myd database [4, 7]. When uploading the form, the combobox1 combined list is filled in with information from the Region table, and the combobox2 combined list with information from the Universities table [4, 8, 9].

After selecting the desired EI, go to the page with the search criteria for CP (Fig. 1).

Determination of the tender offer ID

Criteria for searching for tenders

Educational level: Bachelor

Admission base: Bachelor

Specialty: 022 Design

Form of education: Choose the form of education

Deadline for submission of documents: Choose the criterion for the deadline for submitting documents

Find offers

Fig. 1. Main page of the CP

On the main page of the EI, a form is opened for searching for the ID of the competitive proposal. The form contains options which are the criteria for searching for "ID of the competitive proposal": "Educational level", "Admission base", "Specialty", "Form of education", "Deadline for submission of documents". All fields have a drop-down list, there is no possibility of texting, only options are available. After each selection, the selected criterion is displayed in the field. For example, for a higher education institution, the "Educational Level" contains two available values: Bachelor and Master (see Fig. 2).

Educational level

▼

Bachelor

Bachelor

Master's degree

Fig. 2. Choosing an educational level

The same goes for fields:

"Admission Base" where you can choose: Master, Specialist, Bachelor, etc.; The "specialty" of the training in this field is filtered according to the specific selected EI and educational level;

"Form of education" with a fixed set of values provided for by the educational process of the EI, where you can choose the following forms of education: full time, part time, extra mural, distance;

"Deadline for submission of documents" are available with two values: depending on the CP ("Dates depending on the CP" – the search by date is not performed and all available competitive proposals are displayed in accordance with other criteria and "At the moment" – a search for competitive proposals that are available at a given time is added to the search criteria).

After selecting all the fields, the user clicks on the "Find a proposal" button, launches the search engine according to the criteria selected on the form. After that, an additional panel appears on the site in the form of a table, where the search results are displayed, where it is displayed (Fig. 3): offer ID, name of the proposal, start of submitting documents, the end of submission of documents (If there are more than five search results then they are divided into pages, the next page of results can be clicked on the button below the table).

Offer ID	The name of the offer	Start of submission of documents	End of submission of documents	Course	Training period
1046786	Design (I stage)	29/07/2022	23/08/2022	2 Course	2 years 10 m.
1046789	Design (II stage)	09/09/2022	27/09/2022	2 Course	2 years 10 m.
1073532	Design (III stage)	17/10/2022	31/10/2022	2 Course	2 years 9 m.
1003428	Design (II stage)	09/09/2022	27/09/2022	3 Course	1 year 10 m.
1043651	Design (I stage)	29/07/2022	23/08/2022	3 Course	1 year 10 m.

< 1 >

*Affinity is also determined taking into account the order of the Ministry of Education, Culture, Sports and Science of Ukraine dated November 6, 2015 No. 1151 "On the peculiarities of the introduction of the list of fields of knowledge and specialties for which higher education applicants are trained, approved by the Cabinet of Ministers of Ukraine Resolution No. 266 of April 29, 2015"

Fig. 3. Search result

A flowchart of the algorithm implementing the above actions is shown in Fig. 4. After selecting the search parameters described above, a search query is generated in the database table.

A search query consists of a set of filters, each of which corresponds to a separate parameter for the search. Such search parameters as: "Educational level", "Specialty", "Form of education" are row parameters that correspond to specific values in the table with competitive proposals. In relation to them, when forming a corresponding query into the database, the comparative operation "Equal" is used, which corresponds to a logical check for equality [10].

The Entry Base field is compared to the value of the field in the Competitive Proposals table. When plotting a query into a database, the value of this parameter is added to the query using the search operator "Contains", which meets the search criterion: "One of...", because the corresponding field of the database table may contain one or more values of this parameter [11].

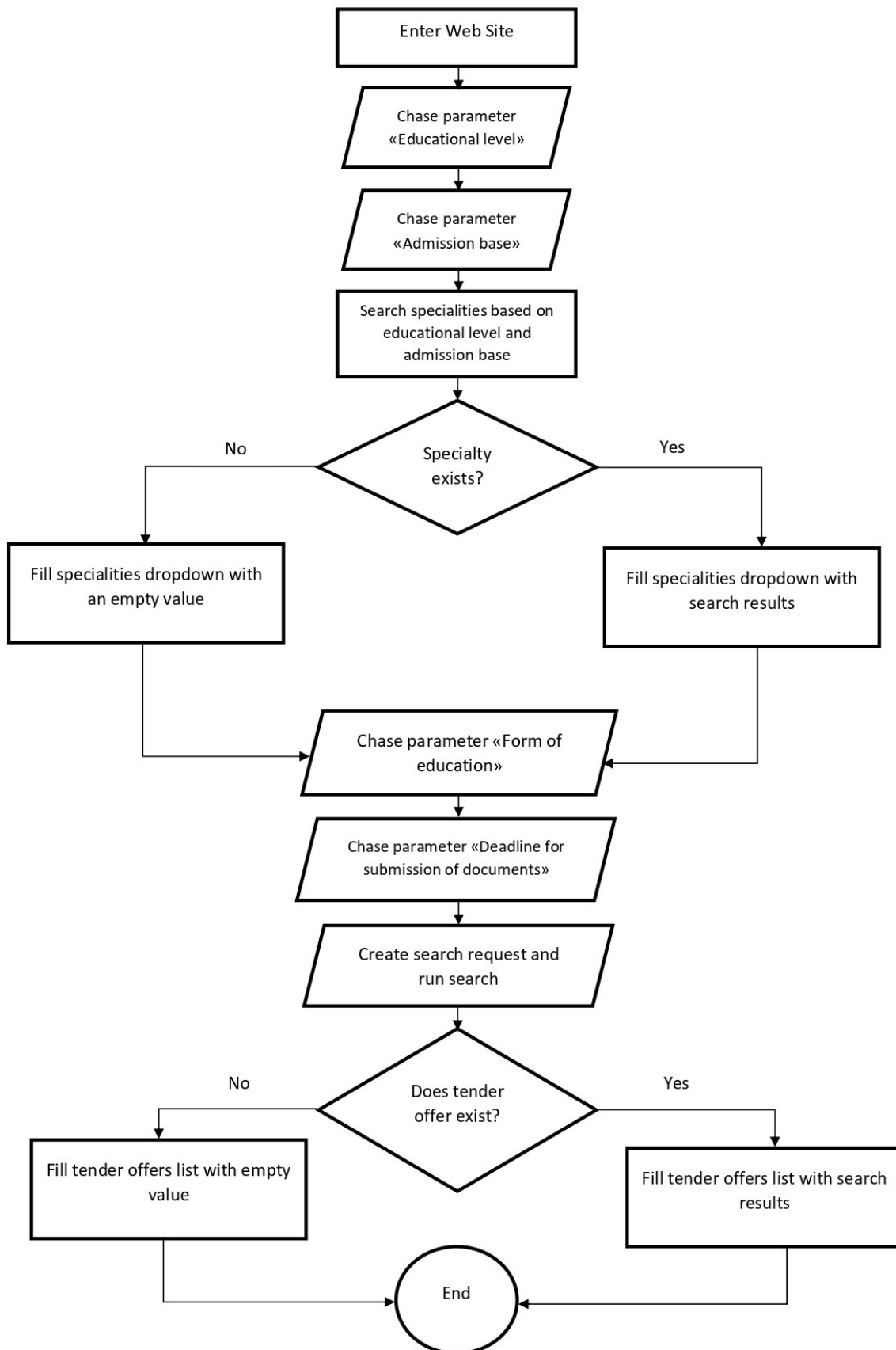


Fig. 4. Flowchart algorithm

One of the most important search criteria is the "Submission Deadline" parameter. If the deadline for submitting documents corresponds to the value: "At a moment", then when building a request to the database, we use a selection filter by the documentStartDate and documentEndDate fields, which correspond to the start and end dates of submission of documents, for the corresponding tender proposal. The criterion for comparison is the current date, which is determined by the system using the built-in function "Date()", which returns the current date for the

user's session on the system. Date comparison is implemented using logical operations: `documentStartDate <=` (less or equal) `Date()` `AND` `documentEndDate >=` (greater or equal) `Date()`.

In terms of the program code of the WIX system, the search code for the relevant bids is as follows:

```
let todayDate = new Date();
let query = wixLocation.query;
let filter = wixData.filter();
filter = filter.eq('specialityData', $w('#userSpeciality').value);
filter = filter.eq('educationLevel', $w('#userEducationalLevel').value);
filter = filter.contains('educationBase', $w('#userEducationBase').value);
filter = filter.eq('studyForm', $w('#userStudyForm').value);
if ($w('#userDates').value == '2')
{
    filter = filter.le('documentsStartDate', todayDate);
    filter = filter.ge('documentsEndDate', todayDate);
}
```

```
$w("#KonkursPropositionsDS").setFilter(filter);
```

```
$w("#searchResults").show();
```

```
$w("#table1").show();
```

The search results are displayed in the system Element table1, which graphically displays the table of results (see Fig. 3).

Conclusions

And the system and definition of the "ID of the competitive proposal" of the specialty (educational program) depending on the selected criteria, namely: education level; base of admission; specialty; form of education; terms of submission of documents allows you to choose CP in two versions: "Dates depending on the CP" – the search by date is not performed and all available proposals are displayed in accordance with other criteria and "At a moment" – a search for competitive proposals that are currently available at a given time is added to the search criteria, which makes it possible to determine the "ID of the tender proposal". The system has an adaptive design, and can be downloaded to various mobile devices, which will allow you always to have information at the fingertips. Also, the system has a short reaction time, reduces the load on the server (since after receiving information from the database, it is processed on the user's computer). The automated system for determining the "ID of the competitive proposal" was posted on the portal <https://www.vstup.org/konkurs>, and the link to it on the site <https://iino.knuba.edu.ua/>. The system was tested during the admission campaign 2022 in the Separate Structural Unit "Institute of Innovative Education of t Kyiv National University of Construction and Architecture", confirmed its performance, the number of users who used the system amounted to 1298 people, which is equal to 92% of the total number of applications for admission.

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