A proposed cloud-based platform for facilitating donation Services in support to needy-students

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Keywords: cloud-based Services, financial support, and donations

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A PROPOSED CLOUD-BASED PLATFORM FOR FACILITATING DONATION SERVICES IN SUPPORT TO NEEDY-STUDENTS

Moh’d A. Radaideh1, Nadil Iyad Mohammad2, Maya Mohammad Mukbil3

Abstract

Popularity of needy-students who cannot afford their university fees has become phenomenon in countries like Jordan. Thus, supporting such students through establishing a reliable cloud-based platform for collecting donations from wealthy people is a very noble action. Such donations will enable needy-students to continue their education to upward their development, reduce their poverty, improve their health, scale-up their gender equality, promote peace across their communities, enhance stability in their societies, and enrich the field of cloud-based Services development. This paper proposes a new cloud-based platform that aims at connecting donors with needy-students in a very discreet way that preserves and honors the Privacy and Confidentiality of their information. We claim that our proposed cloud-based platform depicts a unique novelty that can be easily anticipated from the perspectives of its status as an easy-to-use cloud-based Services platform; its comprehensive set of functionalities; its ability to interconnect its users privately and confidentially; and its ability to easily verify the credentials of its users.

Keywords: cloud-based Services, financial support, and donations.

1 INTRODUCTION

Given the phenomenon increase in poverty around the world, the number of needy-students at universities like the authors’ university (e.g. Jordan University of Science and Technology) has become phenomenon as well. Thus, supporting such needy-students through connecting them with the wealthy people who are willing to donate money in support for needy-students is with no doubt a very noble action. Such donated money will enable needy-students to continue their university education and that will help upward their development, reduce their poverty, improve their health, scale-up their gender equality, promote peace across their communities, enhance stability in their societies, and enriching the field of cloud-based Services development [1][2].

This paper proposes a new cloud-based platform that aims at connecting donors with needy-students discreetly while preserving and honoring the Privacy and Confidentiality of their information. As the authors of this paper and the developers of the said platform, we claim that our proposed cloud-based donations platform depicts a unique novelty that can be easily anticipated from the perspectives of its status as an easy-to-use cloud-based platform, its functional comprehensiveness, its ability to privately and confidentially interconnect donors with needy-students at JUST, and its ability to easily ensure that the applicant student is a needy one based on his/her uploaded document and the record of his/her details that is fetched from the university admission and registration system.

As we speak of cloud-based computing, it is important to provide a quick overview of this subject matter. cloud-based computing is simply defined as the on-demand availability of shared computing resources (e.g. cloud-based data storage, cloud-based computing power, cloud-based development tools, etc.) with no direct management by the user (e.g. development and technical staff, customer, etc.). cloud-based computing can (i) help organizations optimize their initial Information Technology (IT) infrastructure setup costs, (ii) allow enterprises to speed-up their software systems, improve their manageability, and reduce their maintenance, and (iii) enable IT teams to adjust their resources rational to any demand fluctuations [3].

Thus, making an IT platform as a cloud-based one would make it much easier and less expensive in terms of the required logistics for installing, updating, upgrading, backing-up and managing that platform. A

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cloud-based platform is installed one-time on a dedicated (or a shared) cloud-based server by the administrator of that server. For each new customer (e.g. organization), the administrator is the one who creates a dedicated workspace (e.g. instance of that platform) with the required access privileges, including the creation of an administrative account for that workspace [3].

As indicated earlier in this paper, the main objective of this research is to facilitate a cloud-based discrete connectivity between donors and needy-students at our university (i.e. Jordan University of Science and Technology - JUST) through which they can privately and confidentially get some financial support to complete their studies. The proposed platform is integrated with the students’ admission and registration system at JUST, as well as with a third-party online payment system. The first is to provide our proposed platform with all necessary details of the needy-students, and the second is to facilitate the cloud-based online donations.

As reflected from the following snapshots of our proposed platform, needy-students as well as donors need to register and establish their accounts. A donor can then choose to either donate to a specific student or leave it up to the administration of the proposed platform to distribute his/her donation across more than one needy student.

The administrators of our proposed platform are the ones who are entitled to approve or decline the requests submitted by needy-students based on the details reflected from their uploaded documents. The validation of needy-students is performed based on their records as fetched from the university admission and registration system.

The early draft of the documentation package of our proposed platform is available through the following link (https://www.just.edu.jo/~maradaideh/P6_DON/Documentation.zip). This package contains the user manuals, and the various diagrams.

This paper comes in several sections. Section 1 is this introduction. Section 2 presents the literature survey and elaborates on the existing related platforms. Section 3 provides a comparative view between our proposed platform and its related existing systems. Section 4 elaborates on our proposed platform in terms of (i) its components, design, and architecture; (ii) its components interactions such as check students’ validity, their requests, and the received donations; (iii) its use-case diagrams, and (iv) its workflows for the various Actors including the admin, student and donor. Section 5 presents some testing snapshots. Section 6 illustrates some discussions, potential future works, and conclusions.
2 LITERATURE REVIEW AND SURVEY OF THE EXISTING RELATED DONATION SYSTEMS

2.1 Literature Survey of Related Academic Papers and Articles

Agrawal, et. al. [4] introduced a cloud-based food donation application to interlink donors, needy people, and orphans. Each user can submit his/her information. The said application uses GPS technology to track the users' movements. The application searches the closest location path (e.g. using the shortest path algorithm) to identify who would receive the donated food. Donors as well as needy people are expected to register in this application to be able to benefit from its services.

Srividhya, et. al. [5] aimed at building an online Child Foundation Helping system that would be a link between needy orphans, and individuals ready to assist them. Donors can donate through internet banking or online money payment application to make the process easier.

Ramadhan, et. al. [6] proposed a cloud-based Blood Bank Information system that connects donors with Blood Banks to help their blood supply availability. The said system aims at ensuring that blood from all types is available for emergencies.

Pyne, et. al. [7] proposed a smart cloud-based application that enables people to donate blood or any other organ, as well as enables needy people to obtain all blood donation information on their portable system rather than going out and searching for it which ease the process for the donors.

Sharma, et. al. [8] proposed a simple mobile-based application to link those who want to donate books to others who are in need allowing them to obtain books from those who have finished using them.

Mandale, et. al. [9] presented an android-based blood bank application that strengthens the communication across hospitals, blood banks, donors, and the receptors.

Akkas, et. al. [10] proposed a blood donation management system that aimed at connecting blood donors with needy people. A user has to register in the system and enter his/her details and exact location using the google maps.

Pandiaraj, et. al. [11] developed an android blood bank application that users can use to schedule appointments to donate blood and check for available blood at neighboring blood banks. The application uses GPS to detect the user’s location and provide the nearby blood banks.

Lunawat, et. al. [12] proposed a blood and organs application that aimed at connecting blood and organs donors with the needy people through a website and an android application. The said application uses GPS technology to trace the way to the blood banks and hospitals.

2.2 Survey of Related Existing platforms

In addition to the above academic articles, the following is an elaboration on several of the existing donation platforms that we surveyed before proposing our new cloud-based platform:

1. Hayat Educational Fund [13] is a charitable association that is licensed by the Ministry of Social development since 2009. It is a national fund specialized in supporting students at universities and vocational institutes. It provides grants and loans for the post-secondary needy-students to enable them to complete their studies and to build a better future for themselves and their community. It also provides grants and loans for many other types of beneficiaries.
**PROS-CONS-LIST#1: Pros and Cons of Hayat Educational Fund**

<table>
<thead>
<tr>
<th>Pros:</th>
<th>Cons:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It helps supporting needy post-secondary students as well as to many other types of beneficiaries by providing them with grants and loans.</td>
<td>1. It is not a cloud-based platform.</td>
</tr>
<tr>
<td>2. It facilitates receiving donations from different sources.</td>
<td>2. It has no direct online donation via website.</td>
</tr>
<tr>
<td></td>
<td>3. An approved needy-students and his/her sponsor needs to sign a legal contract and bill of exchange at the value of the grant/loan he/she receives.</td>
</tr>
<tr>
<td></td>
<td>4. An approved student is required to provide (25) hours of community service work each semester, in addition to participating in the fund’s various activities and programs.</td>
</tr>
<tr>
<td></td>
<td>5. Loan repayment begins (in the form of monthly installments) one month after receiving the first support.</td>
</tr>
<tr>
<td></td>
<td>6. Non-usable system.</td>
</tr>
</tbody>
</table>

2. **Furejat [14]** is meant to help non-criminal prisoners by contributing to their release non-criminal financial cases. The Kingdom of Saudi Arabia uses the “Furejat” service through the “Absher” application. This application is used to transfer money to the concerned authorities electronically.

**PROS-CONS-LIST#2: Pros and Cons of Furejat**

<table>
<thead>
<tr>
<th>Pros:</th>
<th>Cons:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It facilitates direct online donation.</td>
<td>1. It is not a cloud-based platform.</td>
</tr>
<tr>
<td>2. It provides a range of programs to support needy people.</td>
<td>2. It provides multiple options to speed-up the donation process, particularly, the quick donation option.</td>
</tr>
<tr>
<td>3. It provides multiple options to speed-up the donation process, particularly, the quick donation option.</td>
<td>4. It facilitates multiple payment options.</td>
</tr>
</tbody>
</table>

3. **Naua [15]** is an electronic platform meant to increase charitable work through interconnecting donors, companies, and needy people. One of its programs is called “سناعدني لنخرج”. It targets final year university students to support them financially in partnership with the Hayat Fund [13].

**PROS-CONS-LIST#2: Pros and Cons of Naua**

<table>
<thead>
<tr>
<th>Pros:</th>
<th>Cons:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It facilitates financial support for needy university students.</td>
<td>1. It is not a cloud-based platform.</td>
</tr>
<tr>
<td>2. It facilitates direct online donations.</td>
<td>2. It is limited to supporting final year university students</td>
</tr>
<tr>
<td>3. It facilitates donations with multiple payment options.</td>
<td></td>
</tr>
</tbody>
</table>

4. **Feenix [16]** was launched in June 2017 as a response to the #FeesMustFall movement that spread across campuses in South Africa during 2015 and 2016. The said movement highlighted the extremely high cost of tertiary education and their financial stress impact on the students’ success rates.
**PROS-CONS-LIST#2: Pros and Cons of Feenix**

<table>
<thead>
<tr>
<th>Pros:</th>
<th>Cons:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It facilitates financial support for needy university students.</td>
<td>1. It is not a cloud-based platform.</td>
</tr>
<tr>
<td>2. It facilitates direct online donations.</td>
<td>2. It exposes students’ identities.</td>
</tr>
<tr>
<td>3. It facilitates donations with multiple payment options.</td>
<td></td>
</tr>
<tr>
<td>4. It enables donors to select specific students or direct their</td>
<td></td>
</tr>
<tr>
<td>donations to the Feenix Pool Fund, which is then distributed</td>
<td></td>
</tr>
<tr>
<td>among needy-students such that (i) at least 75% of donations goes</td>
<td></td>
</tr>
<tr>
<td>towards Black, Colored, and Indian students; (ii) 50% goes</td>
<td></td>
</tr>
<tr>
<td>towards female students; and (iii) the preference is given to</td>
<td></td>
</tr>
<tr>
<td>students who are active and involved.</td>
<td></td>
</tr>
</tbody>
</table>

5. **Scholar** [17] was developed with a main goal of making the world a better place to live for everyone. It offers a set of donation and Services programs to communities; funding innovative initiatives and advocating for change.

**PROS-CONS-LIST#5: Pros and Cons of Scholar**

<table>
<thead>
<tr>
<th>Pros:</th>
<th>Cons:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It facilitates direct online donations.</td>
<td>1. It is not a cloud-based platform.</td>
</tr>
<tr>
<td>2. It is an easy-to-use system.</td>
<td></td>
</tr>
<tr>
<td>3. Its site is linked to social media platforms.</td>
<td></td>
</tr>
<tr>
<td>4. It facilitates multiple online donation methods and options.</td>
<td></td>
</tr>
</tbody>
</table>

6. **JazzEmpowers** [18] was meant to facilitate collecting donations to help transforming the lives of youth in underserved schools through jazz education. It was driven by the belief that every child in America has the right to a high-quality music education.

**PROS-CONS-LIST#6: Pros and Cons of JazzEmpowers**

<table>
<thead>
<tr>
<th>Pros:</th>
<th>Cons:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It facilitates direct online donations.</td>
<td>1. It is not a cloud-based platform.</td>
</tr>
<tr>
<td>2. It is an easy-to-use system.</td>
<td></td>
</tr>
<tr>
<td>3. Its site is linked to social media platforms.</td>
<td></td>
</tr>
<tr>
<td>4. It facilitates multiple online donation methods and options.</td>
<td></td>
</tr>
</tbody>
</table>

7. **North Shore ConneXions Society** [19] was meant to collect donations in support to families (children and adults) who are living with intellectual disabilities. Such donations would be used to provide quality programs and Services that help the development of independence and empowerment of adults, children and families.

**PROS-CONS-LIST#7: Pros and Cons of North Shore ConneXions Society**

<table>
<thead>
<tr>
<th>Pros:</th>
<th>Cons:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It facilitates direct online donations.</td>
<td>1. It is not a cloud-based platform.</td>
</tr>
<tr>
<td>2. It is an easy-to-use system.</td>
<td></td>
</tr>
<tr>
<td>3. Its site is linked to social media platforms.</td>
<td></td>
</tr>
<tr>
<td>4. It facilitates multiple online donation methods and options.</td>
<td></td>
</tr>
</tbody>
</table>
3 A COMPARATIVE VIEW

Table 1 provides a comparison between our proposed platform and seven of the existing related donation platforms. The said comparison took place in terms of the comprehensiveness of their offerings of the various Services, Features, and functionalities.

Table 1: A Functional Comparative View

<table>
<thead>
<tr>
<th>Features / functionalities</th>
<th>Hayat Educational Fund</th>
<th>Furejat program</th>
<th>Nuna Foundation</th>
<th>Feenix</th>
<th>Scholar</th>
<th>JazzEmpowers</th>
<th>North shore connexions Society</th>
<th>Our proposed cloud-based platform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloud-based</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>√</td>
</tr>
<tr>
<td>Fully automated process</td>
<td>×</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Needy-people upload their documents</td>
<td>√</td>
<td>×</td>
<td>√</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>√</td>
</tr>
<tr>
<td>Preserving the Privacy of the people-in-need</td>
<td>×</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Providing non-personal information about the needy-student</td>
<td>×</td>
<td>√</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>√</td>
</tr>
<tr>
<td>Easy-to-use</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Linking the site to the various social media platforms</td>
<td>√</td>
<td>×</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>The amount paid to the needy-student is not refundable</td>
<td>×</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Applications are studied during a relatively convenient time</td>
<td>√</td>
<td>√</td>
<td>×</td>
<td>√</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>√</td>
</tr>
<tr>
<td>Multiple online donation methods</td>
<td>×</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
</tbody>
</table>

Table 1 clearly indicates that our platform (e.g. the most-left column in Table 1 above) offers a complete cloud-based set of the donation Services and functionalities (e.g. the most-right column in Table 1 above). Also, it is clear that none of the existing related platforms offers the same level of Services.
4 THE DETAILS OF OUR PROPOSED CLOUD-BASED PLATFORM

4.1 The Architecture

Figure 1 shows a high-level view of the architecture of our proposed platform. It clarifies the bonding among the platform’s components. Our system is designed based on the pipe and filter architecture as we need to ensure a loose and flexible coupling of components, and to be conductive to parallel processing.

Figure 1: Components Diagram

- The User-Administration, Request-Management, and Donation-Management-UI components represent the user interfaces of the proposed platform that handles the input and output operations.

- The Student, Admin, Donor, Donation, and Request components represent the application layer where all business logic and core functionalities take place.

- The Persistence component represents all the parts that are responsible for persisting the data in the database.

- The JUST-DB component represents JUST database that our proposed platform connects to for checking the validity of the applicant student status as registered student at JUST.

- The Security component represents the security requirements of the system, also it generates the users’ passwords.

- The third-party-payment-system component connects a third-party-online payment gateway. Integration with third-party payment solutions is a very efficient method for online businesses. [20]

- The cloud Firebase console component is responsible for storing data.
4.2 Sequence Diagrams

4.2.1 The Check-Validity-Sequence Diagram

Figure 2 below shows the Check-Validity-Sequence diagram (e.g. the Check-Validity Use-Case). It composes four lifetimes (e.g. those of the Request-Management-UI, admin, JUST-DB, and Student components). The parallel dashed lines refer to the object’s lifelines, and the horizontal arrows refer to message exchanges among them. This can be best described as follows:

1. The needy-student uploads his/her documents when he/she registers on the system through the Request-Management-UI component.
2. The uploaded documents are then checked and verified by the admin and the JUST-DB components.
3. After the admin and JUST-DB components review and process the needy-student’s application, they will then decide on it, either accept it or reject it. The system will then notify that student with their decision. Such a decision is typically based on the basic acceptance criteria (e.g. the needy-student must be currently registered at JUST; and his/her uploaded documents must be valid, legitimate, and errorless).

![Check-Validity-Sequence Diagram](image)

Figure 2: The Check-Validity-Sequence Diagram

4.2.2 The Donate-Sequence Diagram

Figure 3 below shows the Donate-Sequence diagram (e.g. the “Make-A-Quick-Donation”, and “Specific-Student-Donation” Use-Cases). It composes four lifetimes (e.g. those of the Donation-Management-UI, Donor, Third-Party-Payment-System, and Persistence components). This can be best described as follows:

1. The donor keys in the amount of his/her donation along with all other required details that are required for completing his/her payment (e.g. his/her Credit / Debit card information).
2. The Third-Party-Payment-System handles the payments (e.g. we use the Stripe API).
3. All transactions are saved in the Firebase-Real-Time-Database, which is handled by the Persistence component.
4. The system then notifies the donor that he/she completed the donation process.
4.2.3 The Create-A-Request-Sequence Diagram

Figure 4 below shows the Create-A-Request-Sequence diagram (e.g. the “Create-A-Request” Use-Case). It composes three lifetimes (e.g. those of the Request-Management-UI, Student, and JUST-DB components). This can be best described as follows:

1. The needy-student keys in the amount of financial support that he/she needs via the Request-Management-UI component.
2. This said amount is then verified by the system to find-out if it is less or equal to the needy-student’s debits using the details obtained from his/her account at JUST.
3. The needy-student will then be notified with the outcome of the said verification.
4.3 Use-Cases Diagrams

4.3.1 The Admin’s Use-Cases Diagram

Figure 5 below shows the admin’s main Use-Cases (e.g. Login, Review-Request, Add-Admin, and Delete-User). This can be best described as follows:

1. The admin checks the needy-student’s uploaded documents, then accepts/rejects his/her application.
2. The admin can add other administrators.
3. The admin can delete users (donors, needy-students, and other admins).

![Figure 5: The Admin’s Use-Cases Diagram](image)

4.3.2 The Donor’s Use-Cases Diagram

Figure 6 below shows the donor’s main Use-Cases (e.g. Login, Register, Make-A-Quick-Donation, Choose-Specific-Student, Online-payment, and Review-Donation). This can be best described as follows:

1. The donor logs into the system (e.g. if the donor doesn’t have an account, he/she needs to register in the system and create a new account).
2. The donor can make a quick donation or choose to donate to a specific student.
3. The donor can review his/her donation, delete and edit his account.

![Figure 6: The Donor’s Use-Cases Diagram](image)
4.3.3 The Needy-Student Use-Cases Diagram

Figure 7 below shows the needy-student’s Use-Cases (e.g. Login, Register, Change-Generated-Password, Create-Request, Review-Request, Delete-Request, and Delete-Account). This can be best described as follows:

1. The needy-student logs into the system (e.g. if the needy-student doesn’t have an account, he/she needs to register in the system and create a new account).
2. The needy-student can change the generated password after he/she is logged into the system for the first time.
3. The needy-student can create a request, and/or delete a request (e.g. under certain conditions).
4. The needy-student can review his/her requests, and delete / edit his/her account.

![Diagram](Image)

*Figure 7: The Needy-Student’s Use-Cases Diagram*

4.4 Workflow Diagrams

Workflow diagrams are used to specify the processes and their steps that should be possessed by the system’s Actors (users) in order to complete their activities and tasks [21]. This section is dedicated to presenting our proposed workflow for each of the three Actors of our system (e.g. admin, donor, and needy-student).

4.4.1 The Admin’s Workflow Diagram

Figure 8 below shows the steps that will be taken during the admin’s lifetime in the system. The admin has to login first, then can do various actions (e.g. Delete-user, Check-Document, and Add-admin).
4.4.2 The donor’s Workflow Diagram

Figure 9 below shows the steps that will be taken during the donor’s lifetime in the system.
4.4.3 The Needy-Student’s Workflow Diagram

Figure 10 below shows the steps that will be taken during the needy-student’s lifetime in the system.

5 SOFTWARE TESTING (BLACK BOX TESTING)

The authors design and used many black-box test cases to test their proposed platform. The plan for the said black-box testing (e.g. along with the overall testing results) is available via the following link (https://www.just.edu.jo/~maradaideh/P6_DON/BBTesting.pdf). Some of these test cases are illustrated in the following diagrams (e.g. Test-Snapshots 1-2). Snapshots of many other test cases are available via the following link (https://www.just.edu.jo/~maradaideh/P6_DON/TestSnapshots.zip)
Test-snapshot#1: Request acceptance

Dashboard

- Create Request
- Delete Request
- Review Request
- Profile

Your request #1524 Progress

80%

Show details

Test-snapshot#2: Donation to a specific needy-student

Request ID: #12548

Amount needed: 500 $

Documents have been checked

Student's Conditions that have been entered

My dad has been in hospital for 2 years, and I'm working while studying to assist my family. But these days are getting hard to balance between my job and my courses in the university. I have uploaded new document in this request.

Amount to Donate: 100 $

Donate Now
6 DISCUSSION AND CONCLUSION

As indicated earlier in this paper, our proposed cloud-based donation platform can help connect donors and needy-students in one platform securely and privately using the firebase cloud. The authors believe they fulfilled the objective of their research by conducting a reasonable literature review, and surveying many of the existing donation platforms. Based on the findings, they extracted a comprehensive set of donation functionalities, and accordingly, they developed, deployed, and tested their cloud-based donation platform.

Similar to what Radaideh, et. al. [3] claimed about their cloud-based IT service delivery management platform, we claim here that our proposed cloud-based donations platform depicts a unique novelty that can be easily anticipated from the perspectives of (1) its status as an easy-to-use and less expensive cloud-based platform; (2) its ability to securely and privately interconnect donors with needy-students at our university over the cloud; (3) its functional comprehensiveness; (4) its easy-integration with the students admission and registration system at JUST, and with any third-party online payment gateway; and (4) its easy validation of the credentials and details of its users.

In terms of future additional work, the authors are planning to extend their proposed platform in order to (i) cover all other universities in Jordan to help needy-students across them; and (2) accept several more types of donations.

DECLARATIONS

Ethical Approval

Not applicable.

Competing Interests

As indicated in the last paragraph in section 6 above, the authors will consider expanding their project such that their proposed platform becomes available to needy students from other universities in Jordan, as well as more types of donations will be acceptable. If such a plan succeeds, the authors may then consider commercializing the final version of the said platform.

Authors’ Contributions

The contributions that were made by the second and third authors (both of them equally) can be summarized as follows:

1- They defined the early version of the requirements, architecture, and design for the proposed platform, then all that was carefully reviewed and finalized by the first author.

2- They drafted the early version of the implementation plan, then that was carefully reviewed and finalized by the first author.

3- They executed the reviewed implementation plan for their pilot version of the said platform.

4- They drafted the test plan for their pilot and executed it after it was carefully reviewed by the first author.

5- They prepared the early versions of all diagrams and snapshots that are included in this paper. The first author then reviewed them and directed the second and third authors on how to revise and finalize them.

The contributions that were made by the first author can be summarized as follows:
1- He reviewed and finalized the list of requirements, architecture, and design that were initially drafted by the second and third authors.

2- He reviewed and finalized the test plan before it was executed by the second and third authors.

3- He reviewed all diagrams and snapshots and directed the second and third authors on how to revise and finalize them.

4- He wrote and articulated this paper.

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Not applicable.

Availability of Data and Materials

1- The early draft of the documentation package (e.g. user manuals, and diagrams) of the said platform is available through: (https://www.just.edu.jo/~maradaideh/P6_DON/Documentation.zip).

2- The black-box testing plan (e.g. along with the overall testing results) is available through: (https://www.just.edu.jo/~maradaideh/P6_DON/BBTesting.pdf).

3- Snapshots of some of the black-box test cases are available through: (https://www.just.edu.jo/~maradaideh/P6_DON/TestSnapshots.zip)

REFERENCES


[21] Indeed website, online available: https://www.indeed.com/career-advice/career-development/workflow-diagram-benefits [last seen on September 9, 2022].
Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- TestSnapshots.zip