

Virtual Library: A Tool to Bridge the Digital Divide in India

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ABSTRACT

Asymmetric information in the world has given rise to an ICT (Information and Communication Technologies) famine. In one part of India, students are enjoying the ICT-enabled techniques and minting money, and, in another part, kids are unaware of mouse and keyboard because of illiteracy. This study is an attempt to discuss the method to devise a digital library which can fill this gap and spread education in those parts of India where there is lack of education. In the digital era, virtual library will play an important role in bridging the gap between 'Digital Divide'. This study tries to give a diagrammatic representation of a digital library and possibilities of education through digital development and penetration of books and knowledge to every nook and corner of India. The study explains the system with data flow diagrams and gives the list of features which can be incorporated in the virtual library. This study is divided into three sections: explains the concept of digital library, shows the pictorial representation of the virtual library and explains the advantages.

Keywords: Data Flow Diagram, Digital Divide, ICT, India, Virtual Library

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INTRODUCTION

The virtual library is a concept which can be created using cloud-based servers, programming techniques and provides facilities of downloading books free of cost or a nominal fee. This will reduce the burden of bags and the students in villages can reach those books which are out of their capacity to purchase. The information and communication technology (ICT) is one of important driving forces for modern civilization. The rapid development and proliferation of ICT has accelerated the economic and social change across all the areas of human activity [1].

Virtual Library

The main barrier in Indian rural society is the fact that people do not associate the benefits of the internet and other communication technologies with their personal needs, believing that "computers are not for them". As a result, they behave very passively towards ICTs [2].

ICT or "Information and Communication Technologies" includes all technologies for the manipulation and communication of information. It supports teaching, learning and a range of activities in education, business and administration. Through virtual library, students can browse through video lectures, e-books, magazines, journals, sample examination papers, solved papers, syllabus, etc., and can also have an easy access to resource persons, mentors, experts, researchers, professionals and peers all over the world. Users from various sectors are today depending on digital information. Corresponding to this demand, an increasing amount of digitized data and services based on such data are being initiated.

As internet has rapidly growth to underline almost aspect of the global economy, the term "Digital divide" has often been referred to internet access it is a divide that affects and reinforces fundamental economic and social divides between and within countries and is threatening to further exacerbate these inequalities [4].

Table 1. Process breakdown structure of virtual library.

VL	1. Process User	1.1 Process Member 1.1.1 Register member 1.1.1.1 Process ‘Premium member’ 1.1.2 Process ‘update member’ 1.1.3 Process ‘change password’ 1.1.4 Mine member 1.1.4.1 Process ‘user choice database’ 1.1.4.2 <u>Process ‘company request’</u> 1.1.4.3 <u>Process Payment</u> 1.1.5 Deactivate member 1.2 Process user request 1.2.1 Process search 1.2.1.1 Process ‘search index master’ 1.2.1.1.1 <u>Process Spelling</u> 1.2.1.1.2 <u>Process ‘Master Index’</u> 1.2.1.2 Process hyperlink 1.2.1.2.1 <u>Process ‘decide page relevance’</u> 1.2.1.2.2 Process Download/ Open 1.2.2 Process browses 1.2.2.1 User Verification (external portal ex. Springer) 1.2.2.2 <u>Process Generate Category</u> 1.2.2.3 <u>Process Download/open</u> 1.2.3 Process user choice 1.2.3.1 Process ‘Suggested readings’ 1.2.3.2 Process ‘images’ 1.2.4 Process helps 1.2.4.1 <u>Process Ask library</u> 1.2.4.2 Process FAQ 1.2.4.3 <u>Process ‘post a query’</u> 1.2.4.4 Process ‘hacked account’ 1.2.4.4.1 Process ‘verify user details’ 1.2.4.4.2 Process ‘generate new password’ 1.3 Validate Member 1.3.1 User Login 1.3.2 Register 1.3.3 Forgot password 1.4 Expire Session
	2. Process supplier	2.1 Process order 2.1.1 Place order 2.1.2 Receive order 2.1.3 Verify order 2.1.4 <u>Process Payments</u> 2.2 Modify supplier 2.2.1 Add supplier 2.2.2 Delete supplier 2.2.3 Modify supplier
	3. Process Reports	3.1 List of new arrivals 3.2 List of journals 3.3 List of new courses 3.4 List of new colleges 3.5 List of scholarships 3.6 List of grants 3.7 List of exhibitions/ Fair/international/national conferences 3.8 List of Talent hunts
	4. Process Ads (after screening)	4.1 College openings with courses 4.2 Conferences(national/international) 4.3 Books (new arrivals- only relevant books or fiction of national importance) 4.4 Science and technology related Magazines/ journal
	5. Process ‘Suggest Course’	5.1 Process ‘User detail’ 5.2 Process ‘Suggest course’ 5.3 Process ‘Suggest Books’

PROCESS BREAKDOWN STRUCTURE OF VIRTUAL LIBRARY

This process breakdown has 50+ processes involved which further need to be exploded and can be converted into programs and a single program or software. There are databases and external

entities that are involved. Table 1 shows the process breakdown structure of virtual library. In the table, the writing styles depict the following

1. No bold: Further explosion required:
2. Bold: process present in DFD
3. Normal: process not present in DFD

DATA FLOW DIAGRAM

Figure 0

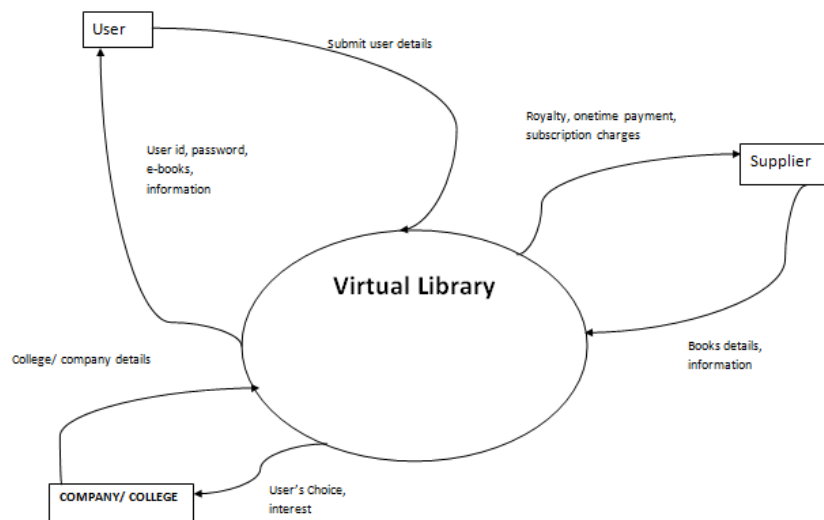


Fig. 1. Figure Zero of virtual library showing the interaction with external entities.

Level 1 DFD

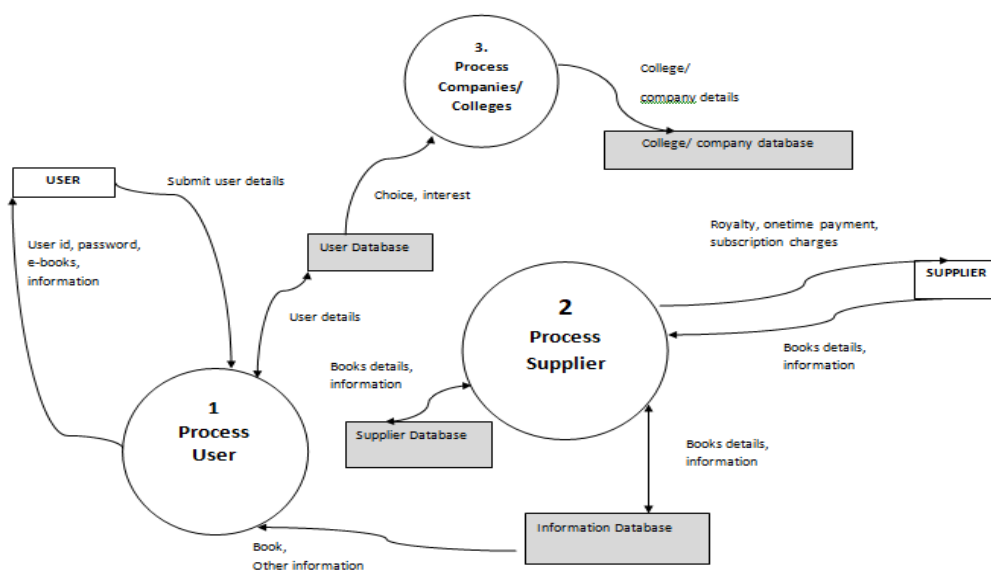


Fig. 2. Level 1 DFD representing the three main functions of virtual library.

Data Flow Diagrams

These series of pictorial diagrams represent the working of a virtual library. There are mainly three processes that can

serve the purpose. They are process user, process company and process supplier. The diagram has been divided into Figures 1–10.

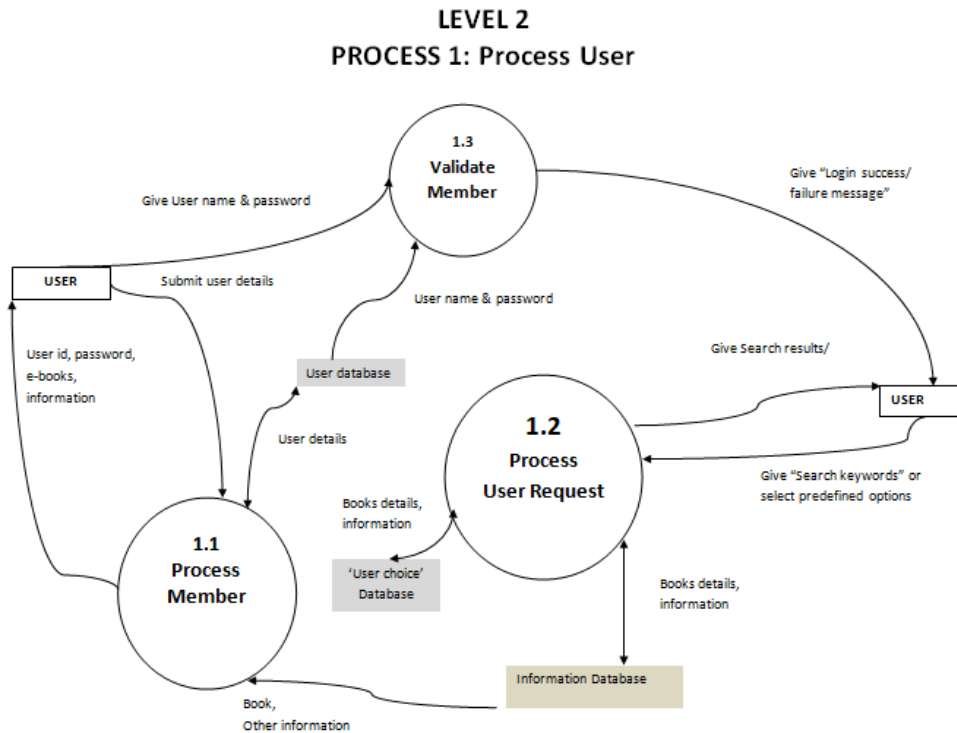


Fig. 3. This DFD represents the first function 'Process User' of virtual library.

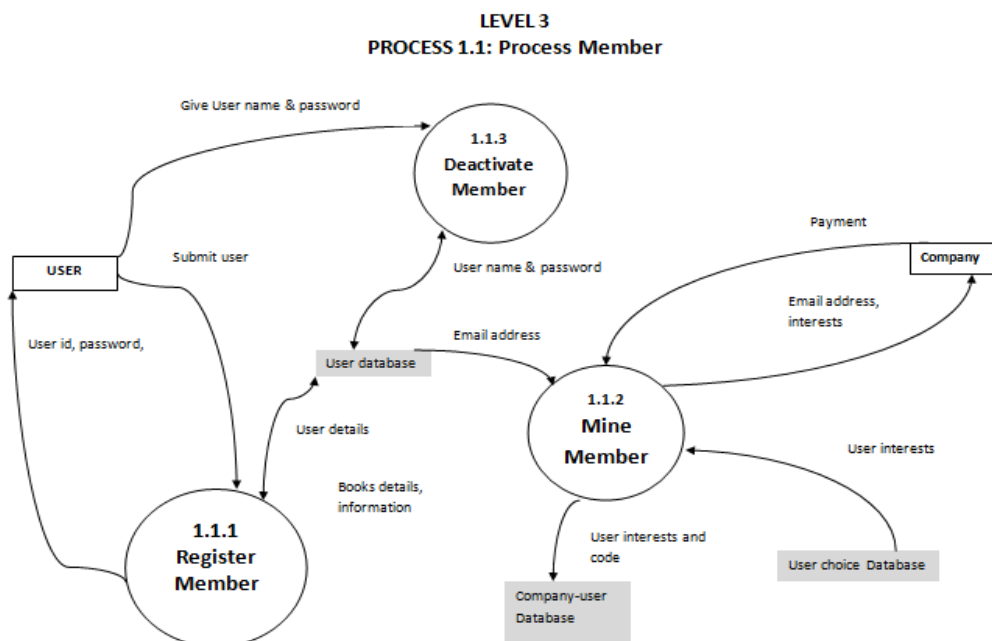


Fig. 4. This DFD represents the first function 'Process Member' in 'Process User' of virtual library.

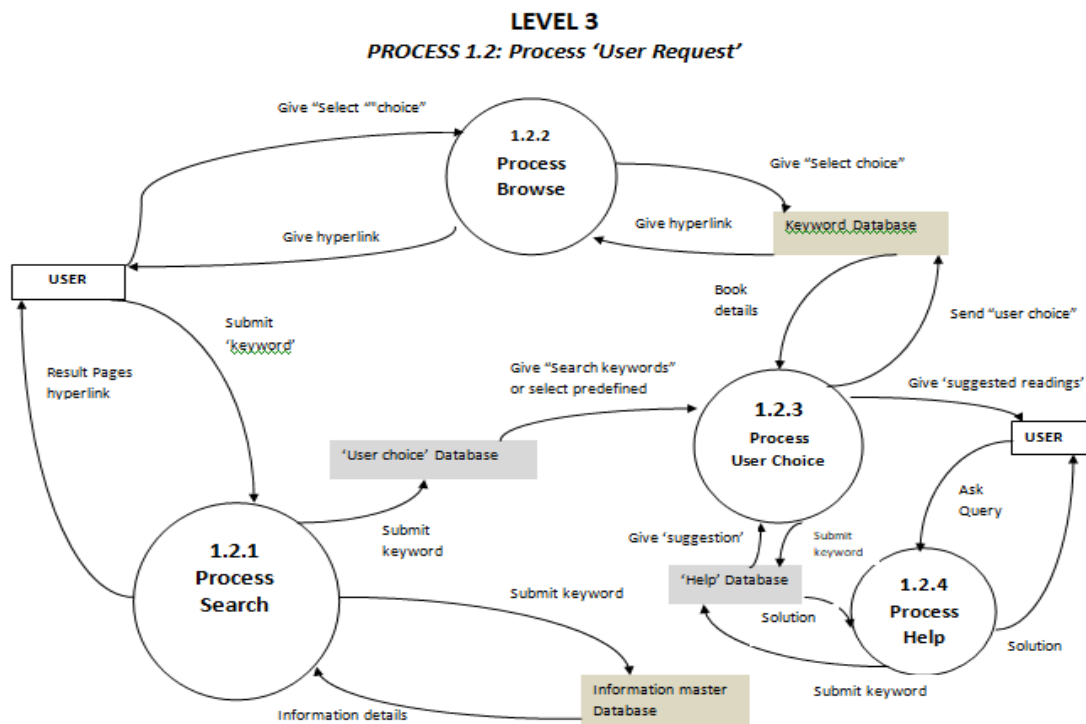


Fig. 5. This DFD represents the second function 'Process User Request' of 'Process User' of virtual library.

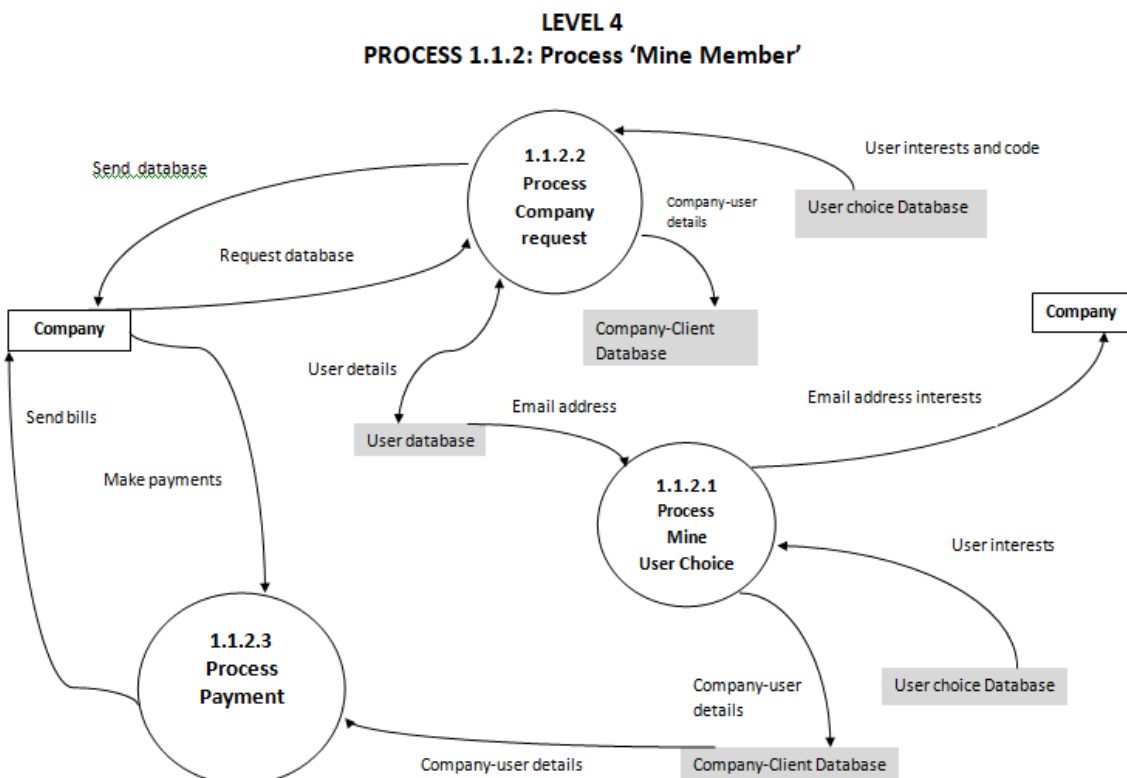


Fig. 6. This DFD represents the process 'Mine Member' of 'Process Member' of virtual library.

LEVEL 4
PROCESS 1.2.1: Process 'User Search'

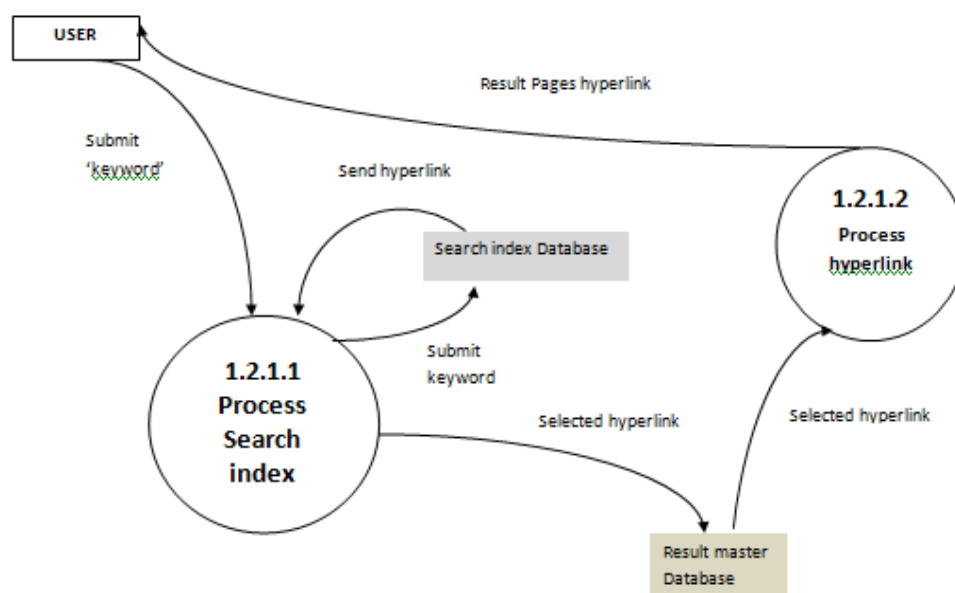


Fig. 7. This DFD represents the process 'User Search' of Process 'User Request' of virtual library.

LEVEL 5
PROCESS 1.2.1.1: Process 'Search Index'

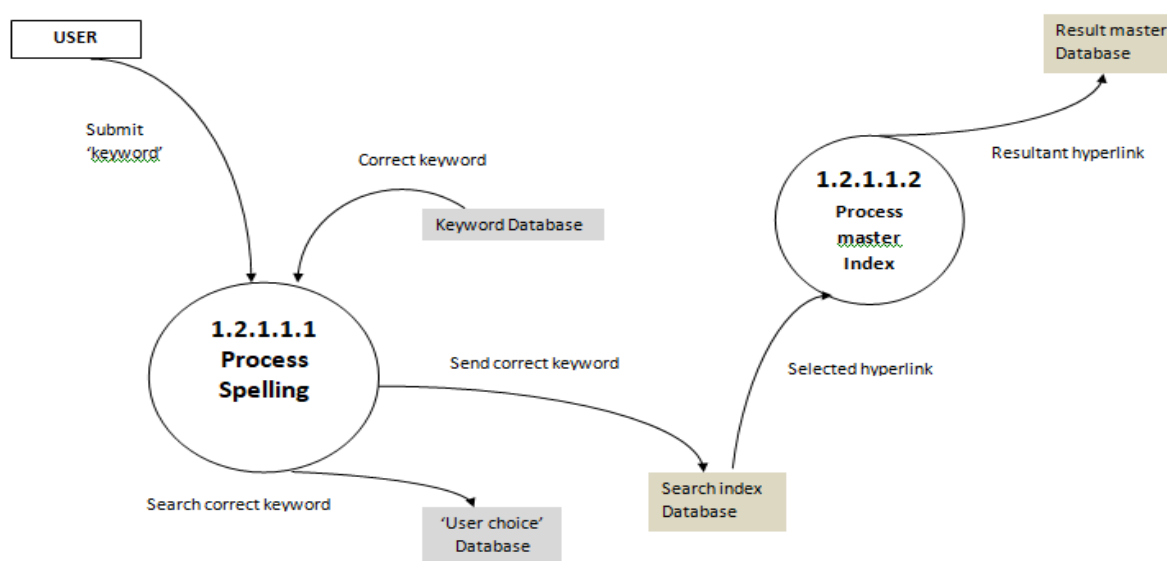


Fig. 8. This DFD represents the process 'Search Index' of Process 'User Search' of virtual library.

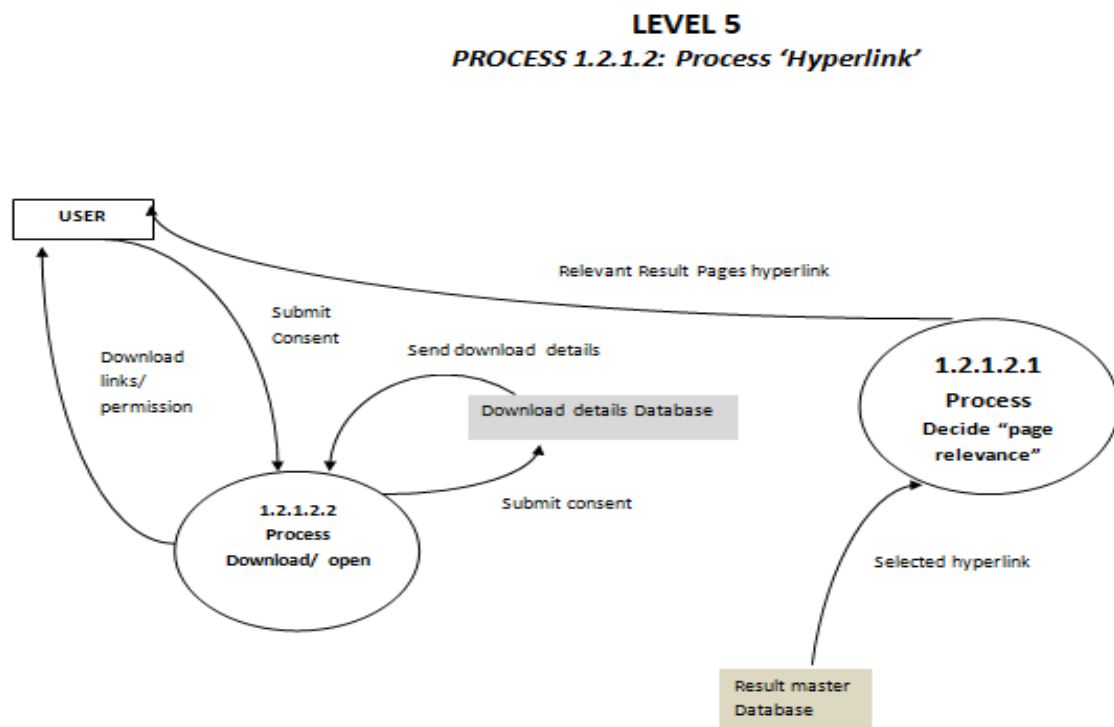


Fig. 9. This DFD represents the process 'Process Hyperlink' of Process 'User Search' of virtual library.

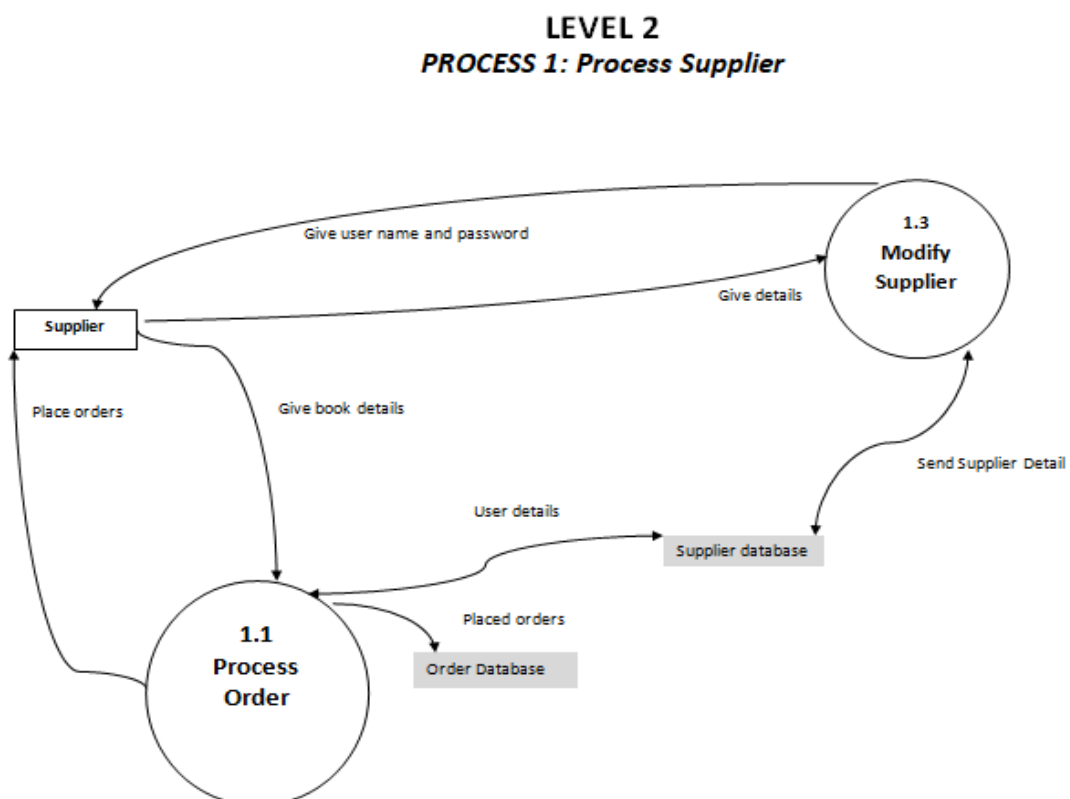


Fig. 10. This DFD represents the process 'Process Supplier' of virtual library.

USES OF VIRTUAL LIBRARY

The advent of information and communication technologies has indeed led to technological revolution across the globes and it continues to change the global social and economic milieus of countries making use of these technologies. [5] The technology hand in hand with Virtual Library can be of immense use.

- **24x7 availability:** In today's scenario, information is available, but the weaker section is unable to access knowledge due to unavailability of electricity, computers, Internet and teachers. This library will be available 24 x 7 for everyone unlike the physical libraries had closed after the office gets over.
- **Paper save/bag reduction:** This virtual library will lead to saving of papers and trees. It will also reduce the carrying of huge bags by students.
- **Readily available information:** The information will be present on cloud and would be readily available.
- **Continuous evolution:** This digital library can evolve very easily. Video lectures of professors, lab demonstrations, training programs, etc. can be added in accordance with the new developments in the technology.
- **Win-win situation:** This virtual library will be a win-win situation for the government to penetrate ICT into the weaker sections of the society [3].
- **Catalog availability:** It will provide a reliable and systematic catalog of information, courses and book for the learners.
- **Continuous learning for the poor candidates:** People who stop studying can continue again with the help of this library. They can avail full facility and study materials of every subject. The cost of books will be very low [6].

CONCLUSION

Virtual library can very easily penetrate in the underprivileged section to teach India. Librarians and other library professional can help working people get more comfortable and skilled with using computers and surfing the World Wide Web. [5] Such a virtual library in the form of a web portal will become very popular because of its availability. The real learners will register to get the desired study material with little search operations and save time, money and trees.

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