Development of Freelancer Market Software System Based on JavaScript

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ABSTRACT

With the continuous development of the Internet, people are looking forward to establishing a network of contacts between employees and employers in the service industry through the Internet [1-2]. To this end, the TaskDigger online platform has been designed and developed. The front end includes Express JavaScript, JavaScript, JQuery, CSS3, Bootstrap, and a few NPM packages. The back end includes Node JavaScript, EJB, and more NPM packages for back-end development. It runs on the V8 engine, Execute JavaScript code outside of a web browser. Visitors can search for performance services or recruitment information at any time, publish assignments, and both buyers and sellers can communicate and sign contracts at any time. This platform has maintainability, portability, repeatability, flexibility, safety, and reliability, providing a helping hand for the gig economy.

Keywords: internet; task digger online platform development; freelancers; gig economy

INTRODUCTION

Freelancers often refer to temporary employees or contract workers in companies. In this article, they refer to practitioners who choose their business projects based on their skills and interests. Due to increasingly fierce competition, freelancers who can survive in the competition generally have broad disciplinary expertise and are at the forefront of computer programming, web design and development, mobile program development, game and graphic design, data input, assistant management, sales and marketing, optimization of search engines, etc. They drive the development of technology and lead the continuous development of technology [3].

The Internet technology developed at the end of the twentieth century made it possible for the digital labor platform to emerge. The platform reorganizes work arrangements by matching the demand and supply of goods and services to complete economic activities or work arrangements for short-term tasks, including freelance, temporary work, work on demand and contract work, which is called "casual economy".

The job of freelancers is a form of contract work, where they can utilize their skills, education, and experience to collaborate with multiple clients and perform various tasks, typically working from home. Many jobs can be submitted online in situations where they do not exist within the company or customer base. Due to the fact that freelancers find jobs without being bound by traditional frameworks, the online freelancer market has grown rapidly in recent years. Upwork, Elance, Freelancers, and many other websites have become successful market websites for online freelancers. As a way of outsourcing business activities, more and more small businesses and individuals are turning to the online freelance market. Sellers can send services electronically through online freelance market websites. Freelancers are likely to receive compensation for their work or be charged daily or hourly. Upwork reported that in 2020, approximately 36% of the US workforce (i.e. 59 million people) had become freelancers [4-5].

For this purpose, the Taskdigger platform was created based on Javascript, through which freelancers provide digital services such as web development, mobile application development, programming, technology,

graphic design, digital marketing, web design, and more; Employers can buy and sell various digital services on this online platform [6].

Freelancers can publish service information on this platform and receive compensation based on their service fees. Employers can place orders for these services [7]. After the order is completed, freelancers can provide feedback on the service. Any user can search for services on this website and sort them by date, month or year, and from lowest to highest prices.

DESIGN PHILOSOPHY
The designed TaskDigger online platform is an online network application that provides digital services such as graphic design, digital marketing, web design, web development, programming technology, etc., promoting mutual market search between employers and employees. Employers can send job content to participants in the bidding process. Freelancers participate in competition on the website, and the winner wins the bid. After winning the bid, freelancers and employers send and receive information through the TaskDigger online platform.

The advantages of TaskDigger online platform include: first, the application of electronic technology and high-speed Internet access and other technological advances have increased the number of jobs for freelancers; Secondly, the freelance market provides a low-cost trading method for participants who are far apart; Thirdly, when market information is transparent, competition becomes stronger, which also forces freelancers to continuously improve their skills, knowledge, communication skills, independent research, and investment portfolio abilities.

DEVELOPMENT
The front-end of the TaskDigger online platform includes Express JavaScript (EJS), JavaScript, jQuery, CSS3, Bootstrap (CSS framework), and a few NPM packages. Embedded JavaScript is a simple template language that allows you to generate HTML tags using pure JavaScript [8-10]. The role of EJS is to serve as a template engine to assist clients in rendering JavaScript code.

The backend of the TaskDigger online platform includes Node JavaScript (NJS), EJS, and more NPM packages for backend development. NJS is a backend JavaScript runtime environment that runs on a V8 engine and executes JavaScript code outside of a web browser.

Express JavaScript (EJS), commonly referred to as Express, is an NJS backend web application framework that is free open-source software licensed under the MIT license.

The MongoDB database of the TaskDigger online platform is an open-source cross platform document-oriented database program, which is a NoSQL database program that uses JSON like documents with optional patterns.

The developed TaskDigger online platform meets the following functional requirements:

(1) Visitors can access the system. Visitors can search for any performance services or recruitment information; (2) Visitors can view all feedback received and sent by users; (3) Sort performance services by date, week, month, and year; (4) Sort services from most expensive to cheapest; (5) Any user can set up a new account; (6) Only registered users can access the system; (7) Users can edit their own configuration files; (8) Users can publish assignments; (9) Edit and delete their own recruitment information; (10) Other sellers can bid on recruitment advertisements to provide the most favorable service prices; (11) Sellers can choose to cancel their quotation request at any time before placing an order; (12) Buyers can view all the quotations they receive; (13) Buyers can hire a freelancer from the quotation; (14) Both buyers and sellers can communicate at any time; (15) Before placing an order, they must first pay the fees in our system; (16) Sellers can provide their projects/digital services; (17) The buyer can save or open the received items/products; (18) Users can add new services, edit and delete their own services, and sell services; (19) The buyer pays on our system and creates an order from the seller's service page; (20) The service owner has set a price for his services; (21) The buyer may order any service; (22) Selling can earn rewards by selling their services; (23) Payment received using the system payment method; (24) The buyer can provide feedback and ratings to the seller; (25) Administrators have complete system control. Administrators can view all user information, all service details, all orders, all job posting details, and all feedback, but they cannot view any personal information, such as passwords or personal messages.

The developed TaskDigger online platform meets the following non-functional requirements:
(a) Maintainability and Security
The system will be gradually updated without affecting the storage of information, making it easy to maintain all functions, code, and data without losing any content or making any bad changes. Identify system defects through regular maintenance and fix them before others receive payment orders. The payment order will not be initiated. Provide a secure system to send and receive payments, as well as secure communication with other users 24/7. This platform will never share any type of private data with other users or third parties. It will provide a highly secure interface and protect their personal data when sending and receiving files or orders. The system ensures compliance with all laws and regulations.

(b) Portability and reliability
The system can be moved from one environment to another without modification. Multiple developers can work simultaneously on the system from any location, and the system will be loaded onto any similar server.

Storing backup data can improve system reliability, and the system is available 24 hours a day, seven days a week. The system will not share any private messages, personal information, or personal transaction history with other users. Quickly recover from system failures and interruptions, and when 1000 users simultaneously access the website, the system should load within 2 seconds. The loading time of the system does not exceed 1 second, and users should process each request within 1 second, with an average page loading time of less than 3 seconds.

(c) Performance, reusability, and flexibility

When the network connection is slow, the system load is within an acceptable range. The number of clicks per second on the web server tested the amount of data that can be rolled back at any point in time. If necessary, reuse all saved data and records. The system includes some reusable user interface components that will be built in a modular manner, allowing for module reuse. Any Internet user can access it from anywhere and use any device.

The developed TaskDigger online platform observes what freelancers are currently doing to process customer transactions, and its floor plan is shown in Figure 1.
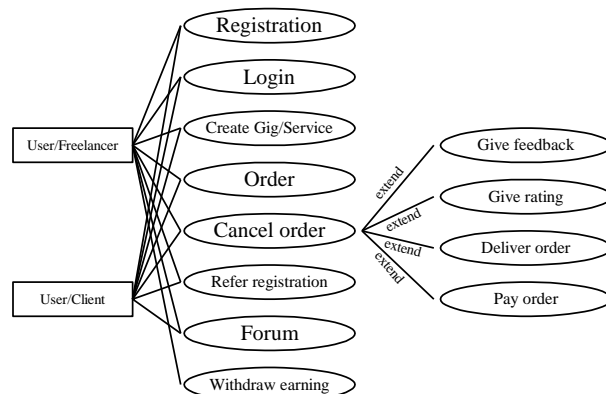
FIGURE 1: Plan structure diagram of the TaskDigger online platform developed.

The multi-point structure diagram of the developed TaskDigger online platform is shown in Figure 2.
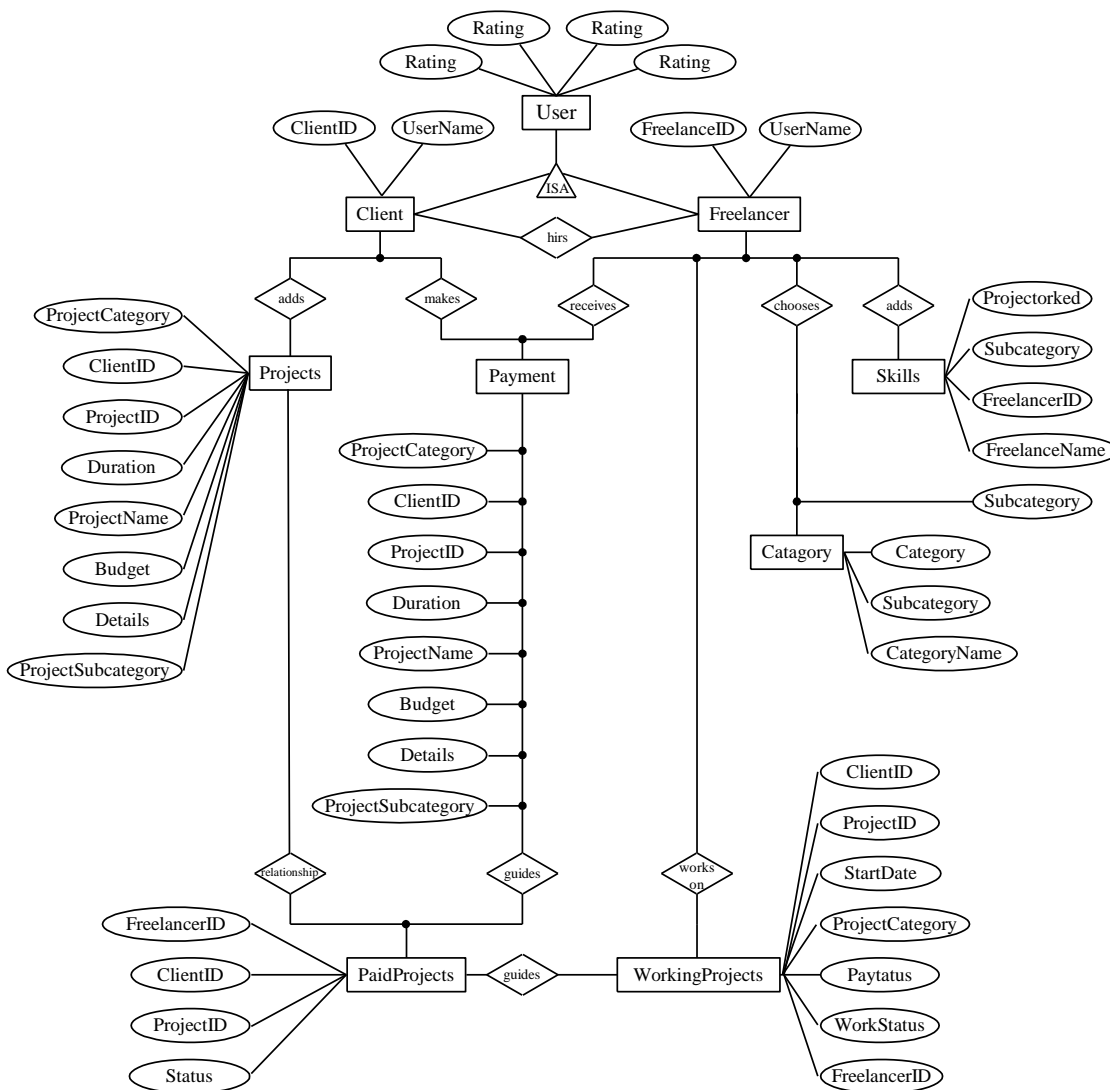

FIGURE 2: Multi point structure diagram of the developed TaskDigger online platform.

INSPECTION

The system user interface and task miner have a unique, elegant and simple new user registration page as shown in Figure 3. Here, customers or freelancers can easily register an account within one minute; After registration, users/freelancers will be redirected to the login page, and the system will ask for their username, user email, and password before they can enjoy the TaskDigger service.
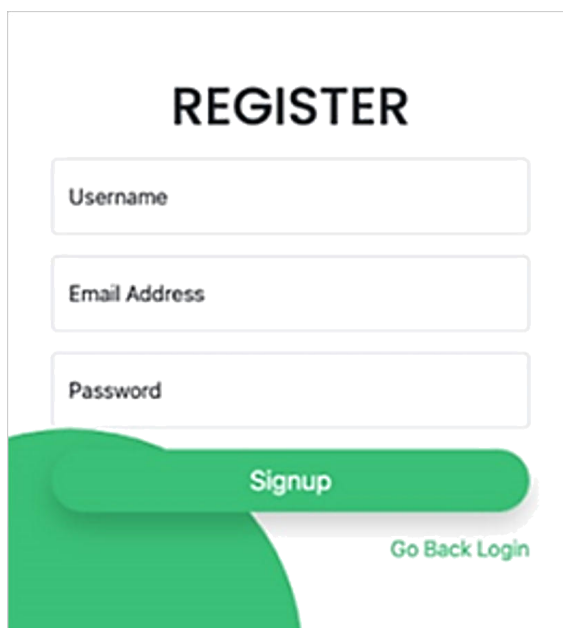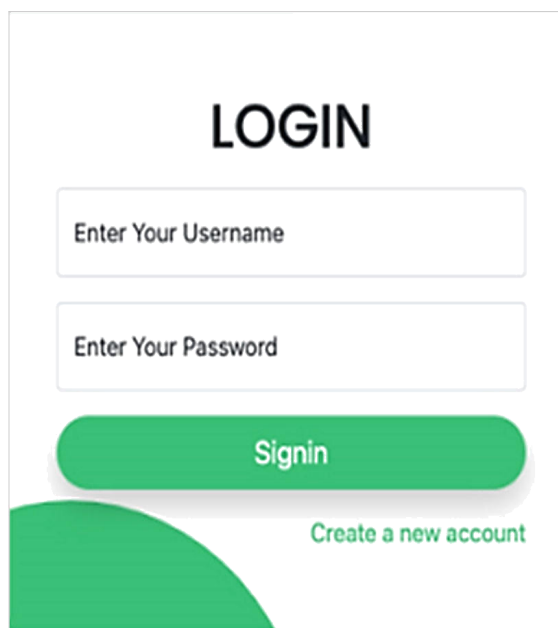

FIGURE 3: New User Registration Page.

FIGURE 4: Login Page.

(1) User List Page

This page displays the entire user list of the system. It can only be accessed from an administrator account. If the administrator appears to have any user engaged in any fraudulent activities or attempts, the administrator can delete the user from the system and block it. Administrators can edit user information from this page.
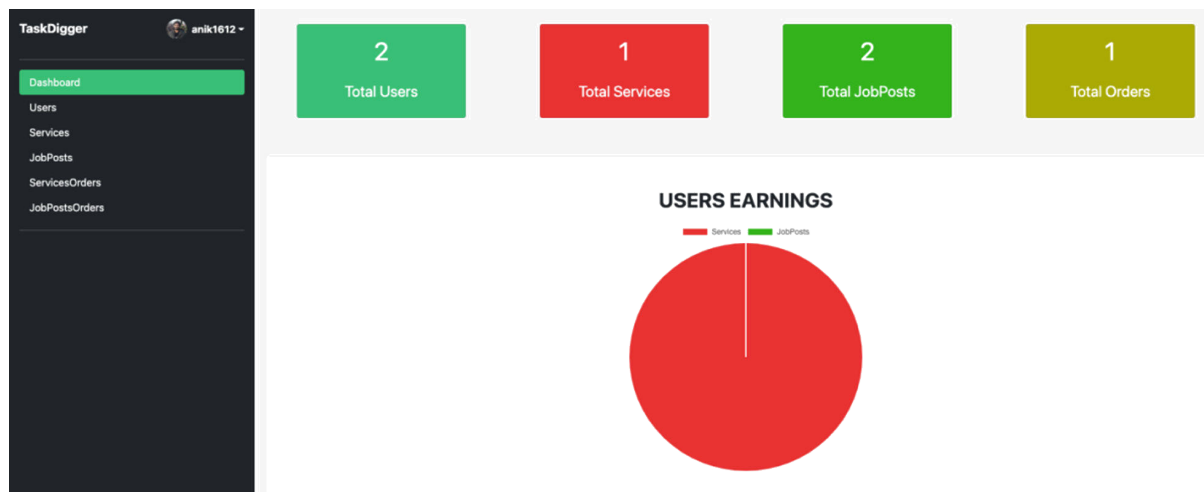

FIGURE 5: Management Panel.

(2) Management Panel Page

Used to display a user list, which first displays the most recent users.
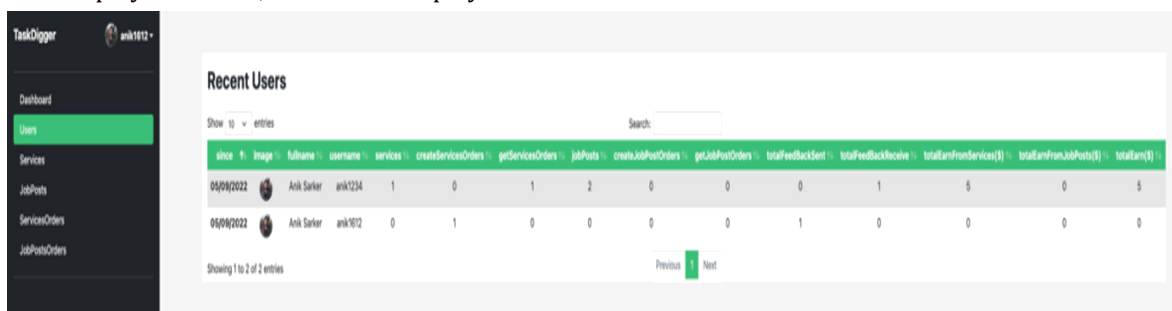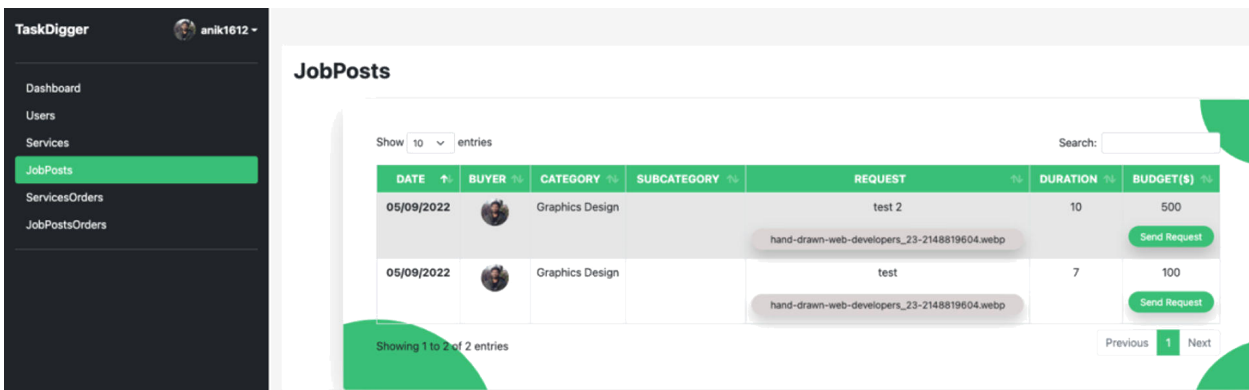

FIGURE 6: Administrator Dash.

FIGURE 7: Taskdigger Platform Display Position List Management Panel.

Figure 8 shows the management panel for the list of all gig (GIG) orders on the Taskdigger platform.
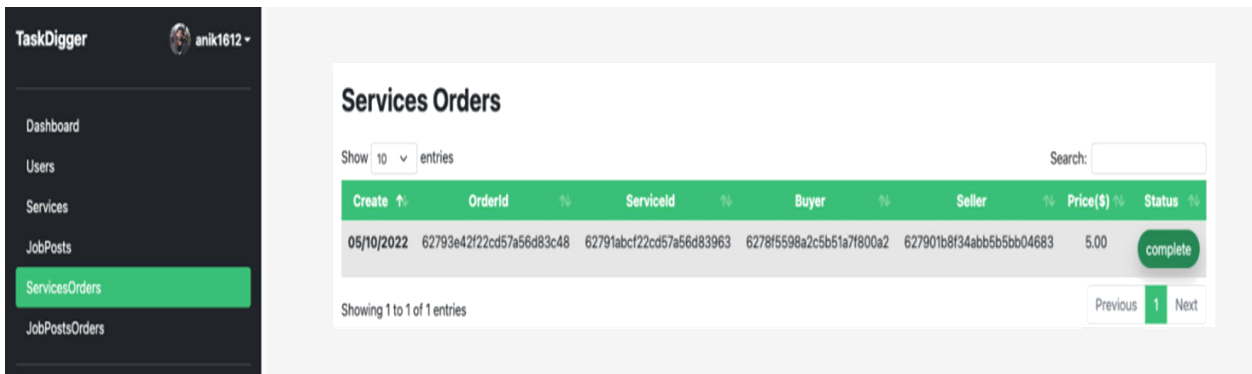

FIGURE 8: Shows the Management Panel for The List of All Gig Orders in The System.

When buyers or customers pay for orders through stripes, they will receive this type of payment receipt. Figure 9 (3.30) shows a payment receipt received by a user.
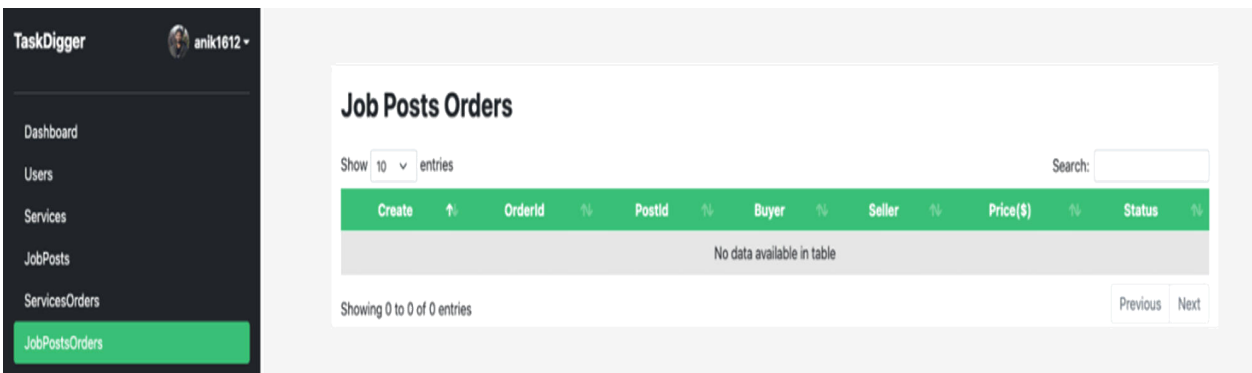

FIGURE 9: Management Panel.

CONCLUSION

Website testing is the process of checking for potential vulnerabilities in your network application or website before it goes live and is open to the public.

Web testing checks the functionality, availability, security, compatibility, and performance of web applications or websites. User profile module testing is as shown Table 1.

TABLE 1: User Profile Module Testing.

Test	Email	Username	Password	Pass/Fail	Message
1				Fail	Email, username, and password are not empty
2	test@g	existing123	12	Fail	invalid credentials
3	test1234@gmail.com	existing123	123456	Fail	Duplicate username
4	test@gmail.com	Test123	123456	Pass	Valid credentials

FIGURE 10: User Profile Failure/Verification Message.

If any user wants to delete or attempts to delete their email, they cannot. The system has validation that restricts users from performing such operations. Figure 11 shows the situation where users may encounter this error.

(1) Feedback Module Testing

FIGURE 11: Feedback Failure/Verification Message.

Figure 12 shows that if any customer or buyer only attempts to provide ratings rather than feedback, the user cannot perform these actions. The user will receive an error or verification message.

(2) The Future of The System
The TaskDigger team will study the freelance market and investigate the needs of the website based on user and client needs. Over time, the system will introduce many new features.

Some of the upcoming features of Taskdigger include:
a. Real time notifications
In this module, if users have any information from the system, they will see real-time updates.

b. Outsourcing team
When this module is released, the TaskDigger system will provide a team of freelancers. This means that if some clients want a team instead of a freelancer, they can choose a team based on their own needs.

c. Translation
In this module, the task mining system will provide localization functionality for its users. Therefore, users can translate webpage content into their own language.

d. New payment gateway
Currently, only striped payment gateways use TaskDigger for currency transactions. In the near future, TaskDigger will launch many new payment gateways, making payment systems easier for all types of users.

e. Conclusion
Many people benefit from freelancing if they want to become self-employed and work as a part-time employee.

According to many online sources, freelancers earn more money than office employees. While this is important for any type of hiring, it is especially important for freelancing, where your name and reputation are a job to bring in business.

Lucas suggests a straightforward strategy for assessing the health of your public presence: Google yourself every now and then to see what people are discovering about you. Signing up on the TaskDigger platform allows client and freelancers to join a platform that truly works towards achieving a unified goal with the click of a few buttons and browser interactions.

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