Hire World : Web Application for Discovering the Best Talent and hosting in the Cloud with help of Docker using AWS Cloud

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Abstract— In this paper, an Amazon Web Services (AWS) cloud website recruitment system is run using Docker containers on an EC2 instance. Campus recruitment is a vital component of the operations of many businesses and educational organisations. This process might be shortened to make it easier for businesses to contact prospective employees. The benefits of hosting a college recruiting system website in the cloud are discussed in the first portion of the article. Also featured is Docker, a containerization technology that makes it easy to install and maintain web applications. The AWS EC2 service and its features, such as scalability and flexible computing, are the subject of the following section of the essay.

A detailed tutorial on using Docker to deploy a college recruiting system website on an EC2 instance is also provided in the post. It includes instructions on how to set up the EC2 instance, install and configure Docker, and deploy the website code in a Docker container. the procedure for configuring the website's security and scalability using an AWS EC2 instance. In the paper's conclusion, "Applications in the cloud," the advantages of using Docker to host a university recruitment system website on AWS EC2 are discussed.

This research paper provides a full description of hosting a campus recruiting system website using Docker on AWS EC2, making it a useful resource for academic institutions and businesses looking to optimise their employment process and benefit from cloud computing and containerization.

Keywords— Amazon Web Services (AWS),Docker containers,EC2 instance ,Campus recruitment, Cloud hosting, Web applications, Scalability , Flexible computing, Deployment, University recruitment , Cloud computing, Containerization

Introduction

The paper explores the advantages of using Docker containers for web application deployment and concentrates on the advantages of hosting a college recruiting system website in the cloud. To set up and configure the EC2 instance and deploy the website code in a container, refer to the tutorial provided in the paper. The benefits of using Docker and AWS EC2 to host a university recruitment system website in the cloud are covered in the paper's conclusion. Overall, the paper serves as a helpful resource for enterprises and academic institutions wishing to enhance their hiring procedures and make use of cloud computing and containerization technology.

PROBLEM STATEMENT

The battle for top talent has intensified in today's quickly changing business environment. Organizations need to be able to recognise and attract the top candidates for their available roles if they want to stay ahead of the curve and maintain a competitive edge. Traditional techniques of talent discovery, however, can be time-consuming, expensive, and not always yield accurate findings. As a result, businesses are increasingly using web tools to simplify the hiring process and swiftly and precisely pinpoint the finest candidates.

The usage of online tools for talent identification has grown in popularity in recent years because they may assist businesses in more effectively and properly identifying and evaluating potential employees.

Also, the technologies Docker and AWS Cloud have emerged as potent instruments that can improve the performance and scalability of online applications. AWS Cloud offers a scalable and dependable platform for running applications in the cloud, while Docker enables apps to be bundled in containers, making it easier to deploy and manage them.

Despite the potential advantages of adopting cloud technology and web applications for talent identification, many businesses still have trouble selecting the top candidates for their vacant positions. This is caused by a number of things, including the dearth of efficient tools for discovering talent, the challenge of finding the appropriate skills and expertise, and the low visibility of the candidate pool.

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The project will focus on the following research questions:

1)What are the key features that makes the web application helpful?

1. Resume Parsing: A crucial feature of any talent discovery application is the ability to parse and analyse resumes.

2. Job Posting and Application Management: The web application should allow recruiters to post job openings and manage applications received from candidates.

3.Candidate Profile Management: The application should allow recruiters to create and manage candidate profiles

4. Search and Match: The web application should provide a robust search and match function that allows recruiters to quickly identify the most suitable candidates for a job.

5. Collaboration and Communication: The web application should enable collaboration and communication between recruiters and hiring managers.

6. Analytics and Reporting: The web application should provide analytics and reporting features that enable recruiters to track key metric, such as the number of applications received, number of pending applications , number of placed students . This feature should provide recruiters with insights that help them optimize the recruitment process.

Overall, a web application for talent discovery should be easy to use, intuitive, and provide a comprehensive set of features that streamline the recruitment process and enable recruiters to identify and hire the best talent quickly and effectively.

2).How can Docker and AWS Cloud technologies be leveraged to enhance the performance and scalability of the talent discovery web application?

Docker and AWS Cloud technologies can be used to enhance the performance and scalability of the talent discovery web application by providing a flexible and scalable infrastructure for deploying and managing the application. Docker allows for easy packaging and deployment of the application and its dependencies, while AWS Cloud provides scalable and reliable infrastructure for running the application. Additionally, AWS services such as Elastic Container Service,EC-2 INSTANCE can be used to optimize the performance and scalability of the application. By leveraging these technologies, the talent discovery web application can be made more efficient, scalable, and cost-effective.

3).How effective is the web application in identifying and evaluating potential candidates compared to traditional talent discovery methods?

The effectiveness of the web application in identifying and evaluating potential candidates compared to traditional talent discovery methods depends on various factors such as the quality of the data used, the algorithms used for matching candidates with job requirements, and the user interface of the application. However, in general, a web application for talent discovery that utilizes data analysis algorithms can provide more accurate and efficient results than traditional methods. Moreover, the use of Docker and AWS Cloud technologies can enhance the performance and scalability of the

application, making it more effective in identifying and evaluating potential candidates.

4).What are advantages of using Docker and AWS?

The advantages of using Docker and AWS for Hire World are:

Portability: Docker containers can be run on any system with Docker installed, which makes the Hire World web application portable across different environments.

Scalability: AWS provides auto-scaling features that allow the Hire World web application to handle increased traffic and user load.

Flexibility: Docker and AWS allow for the quick and easy deployment of Hire World updates and changes, enabling faster delivery of new features and bug fixes to users.

Security: AWS provides a range of security features, such as firewalls, encryption, and access controls, to ensure that the Hire World web application and user data are protected.

Cost-effective: Using Docker and AWS for Hire World can be cost-effective because it allows for efficient resource utilization and scaling based on actual usage.

Ease of management: Docker and AWS provide a range of tools for managing and monitoring the Hire World web application, making it easier for developers to maintain the application and ensure that it is running smoothly.

OBJECTIVES OF HOSTING IN THE CLOUD

Dependable and secure hosting services: A cloud hosting website's major goal is to give its customers dependable and secure hosting services. Uptime, data security, and backup and recovery options are all part of this.

Scalability and flexibility: Resource allocation is made possible by cloud hosting's scalability and flexibility. The goal is to give clients the flexibility to quickly scale their hosting resources up or down to meet changing business requirements.

Cost-effectiveness: A cloud hosting website's goal is to offer affordable hosting solutions to its clients. This involves providing clients with various pricing options that are clear and allow them to only pay for the resources they actually utilise.

High-performance: Cloud-based hosting allows you to be always available and fast in service.

Customer service: A cloud hosting website's main goal is to offer top-notch customer service. This includes providing accessible support channels,

skilled technical support personnel, and round-the-clock assistance.

Integration with other services: To improve the entire hosting experience for customers, cloud hosting should provide integration with other cloud services including content delivery networks (CDNs), database services, and backup solutions.

SUSTAINABILITY:

Promoting Sustainability through the use of energy efficient hardware and lowering its carbon footprint through environmentally friendly practices may also be a goal of a cloud hosting company

SIGNIFICANCE OF THE WEB APPLICATION

Enhancing talent discovery's efficacy and efficiency: Organizations struggle greatly to find and hire the best personnel for their teams due to the fierce competition on the employment market. Conventional talent identification techniques are frequently time-consuming and expensive, and they may not produce dependable or accurate findings. The talent identification process may be accelerated and made more accurate with the help of a web application that makes use of Docker and the AWS Cloud, increasing its effectiveness and efficiency.

Using cutting-edge technology: The AWS Cloud and Docker technologies have emerged as potent solutions that can improve the performance and scalability of online applications. The project can demonstrate the benefits and capabilities of these cutting-edge tools in the context of talent finding by creating a web application that utilizes these technologies.

Offering a user-friendly platform: The web application can offer both recruiters and job searchers a user-friendly platform. Potential applicants may be quickly found and narrowed down by recruiters, while job seekers can develop profiles that showcase their qualifications. The tool helps speed up the hiring process by facilitating contact between recruiters and job seekers.

Contributing to the creation of talent discovery tools: The project can help create tools for talent discovery that are more effective and efficient, enabling firms to find and hire top talent more rapidly and successfully. The project has the potential to have a substantial impact on the hiring process by addressing the shortcomings and difficulties of conventional talent finding techniques and putting forth a solution that makes use of cutting-edge technology.

LITERATURE REVIEW

Web applications have gained popularity recently in the recruitment process as they allow businesses to locate and assess potential applicants more quickly

and correctly. This is crucial in light of how difficult it is for firms to find and hire the top people for their teams in today's competitive labour market. Conventional approaches for finding talent are frequently time-consuming, expensive, and may not produce dependable or accurate results.

In general, the literature indicates that Docker technology offers a number of advantages for web apps for university management, especially when hosted on cloud infrastructure like AWS. These advantages include better resource efficiency, scalability, portability, and application performance. But for successful adoption, issues like security, integration, and management complexity must be resolved. Despite not particularly addressing "University Placement Web application with Cloud Hosted Docker Technology on AWS," these publications still offer insightful information about the usage of cloud computing and Docker technology in the educational setting.

1)An online tool for talent identification was created by Saini and Srivastava (2017) using PHP, SQL to analyse resumes and match them with job needs. According to the study, the web application was efficient at locating possible candidates, cutting down on the time and effort needed for the hiring process.

2)I have even took some references from our college placement application called superset.

3).Karthik et al. (2019) created a web application for talent discovery that analyses job .

4).A survey on Docker and its significance in cloud by Amith Raj M P, Ashwini M.L, Bhagyashree Das, Vaidehi M.

5).An Introduction to Docker and Analysis of its Performance by Babak Bashari Rad, Harrison John Bhatti , Mohammad Ahmadi

6) .Web Application Hosting Article in the AWS Cloud by amazon.

7). A Survey of Cloud Computing Technologies for E-Learning Systems" by Mohammed A. Al-Shehri and Abdullah S. Alghamdi. This paper provides an overview of various cloud computing technologies that can be used to support e-learning systems, including Docker.

8). "The Role of Cloud Computing in Education" by Gareebah Al- Rasheedi and Nabeel Khan. Which gives an idea how to cloud computing is benefitting today’s world.

9). Containerization and Orchestration of Web Applications in AWS," by J. Louie and R. Rivera (2019). This material helped to know about dockerizing the applications and the brief process of uploading them in the aws.

REVIEW OF WEB APPLICATION,DOCKER AND HOSTING TECHNOLOGIES:

For this web application the languages I used were HTML , CSS, JS, MYSQL and PHP and I used a framework of bootstrap ,and for hosting the application in Local server I used an application called XAMPP and for storing the information

entered i used MYSQL and the information was stored in PHP-ADMIN page itself.

Coming to the docker part of the web application it is helpful in containerizing the web application which makes a container of all the code, web application and its dependencies in one destination.
Docker is the present technology in market ,the usage is increasing as its popularity is increasing due to its benefits lets discuss about some of them the main reason everyone use docker is because of its portability we can move it to any required environment just by moving the container and no need to worry about missing packages then the Scalabilty whenever the demands increases or decreases based on that we can increase or based on that we can adjust the containers and since it is containerized in a single container they are considered to be light weight file which means they can be deployed faster than the normal files and even work faster.
If you need to share code with your colleagues normally you might use github and in the same way you share the containers in docker with your colleagues
they can work in collaboration which might help will definitely save a lot of time.

After the docker step we need to get into deploying the app in aws:
Just before this technology came into light industry used to use traditional server with huge machineries and which costed them a lot of money ,expensive electric bills and huge space. But after cloud service these things are big relief some of the advantages of using aws are scalabilty which allows the aws to increase or decrease the number of active servers based on the demand for example :During Deepavali Big Billion Day sale the usage increase during that time so the numbers of servers are increased so that the machines can handle the load.
And even its reliabilty Cloud servers are normally always available, the end users normally don't face any sort of issue during the usage of the application. Cloud services provide security such as encryption and access control.

There are many services provided by aws:
Amazon elastic cloud(ec2 instance) , Amazon simple storage s3, Amazon relational database(rdbs), Amazon kubernetes service, Aws lambda, Amazon cloud front, Amazon simple notification service(sns) ,Amazon cloudwatch and so on.

But we are going to use ec2 instance in this project:
With the help of the online service Amazon Elastic Compute Cloud (EC2), users can start and control virtual servers, sometimes referred to as instances, in the cloud. EC2 instances can be accessed from anywhere in the world via the internet and configured to run a variety of operating systems and applications.

Scalability, flexibility, reliability, and security are just a few advantages offered by EC2 instances. Users can scale them up or down based on demand and only pay for the resources they really utilise. Moreover, users are in complete control of their instances, enabling them to be tailored and configured to suit their unique requirements.

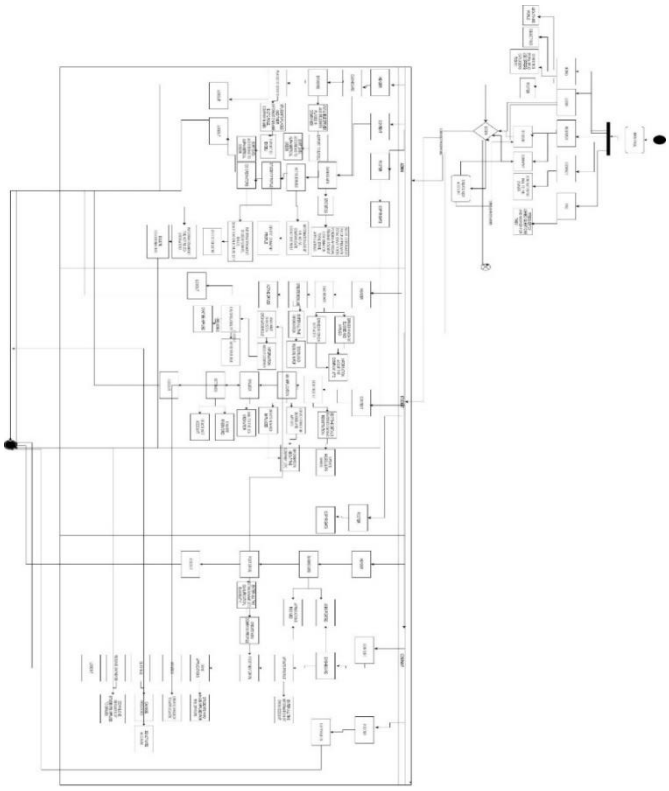
METHODOLOGY:

Tools that have been used to create this project:

Programming languages: PHP, HTML, CSS, and JavaScript were used to construct the Hireworld project .The backend is done by PHP and JS, it uses MYSQL to store the information. I have given workflow of web application below.

Tools: Many IDE's are available today ,but I have used the Visual Studio Code. Github was utilised as a version control system to monitor codebase changes, and Docker was used to build a containerized environment for the project.

WORKFLOW OF THE WEB APPLICATION



The Hireworld project will be launched on the Amazon cloud by using an EC-2 instance.

Initially when I was using this web application I was using XAMPP server for deploying the website locally.

In XAMPP server we can use Apache for deploying the application in browser and we can use Mysql to store the information entered in the web application.

We can activate both these servers by starting apache and mysql server in xampp.

We can access the web application in the browser by giving link as localhost/hireworld (name of the folder of your project)

We need to store all the information entered in the web application by creating a database with required tables in PHPADMIN page, so whatever the

Information we are going to enter in the web application it is going to store in the database.

CONTAINERIZING THE PROJECT WITH HELP OF DOCKER :

1)INSTALLATION OF DOCKER:

Developers can build, package, and deploy apps more quickly and effectively using the widely used technology known as Docker. Installing Docker is a prerequisite for utilising the advantages of containerization. The first step after installation is to create a docker file in the web application's root directory. This file will have all the instructions Docker needs to construct the container image, such as pulling the necessary PHP version and installing any other dependencies for the application to function properly. Developers can more easily deploy and scale their applications across various environments by utilising Docker to handle the dependencies and configurations needed for the programme to function. Docker installation and creation.

2)CREATION OF DOCKERFILE AND DOCKER-COMPOSE.YML:

The next step after writing the Dockerfile is to build a docker-compose.yml file. This file lists the different services needed to operate the application along with their setups. With the use of this file, developers may simply manage many containers and choreograph their interaction to function as one unit. It is simpler to manage and deploy the application across many environments when several services are linked into a single container using the docker-compose.yml file. All the services connected to the container will begin to function once it is started, guaranteeing that the application may be quickly and easily launched. This method enables programmers to speed up the deployment procedure and guarantee that the application is constantly accessible and operating as intended. Developers may control sophisticated apps by utilising Docker Compose.
By using Docker Compose, developers can manage complex applications with ease, improving the efficiency of the software development process and reducing the risk of errors or downtime.

3)COPY THE PROJECT TO A CERTAIN DIRECTORY IN DOCKER:

To copy files and directories from the host computer into a Docker image, use the COPY
command in Docker. Adding files and directories to the image while it is being built is possible.

The source directory on the host computer and the destination directory in the Docker image can both be specified when executing the COPY command. The default setting for the destination directory is the image file system's root. To specify an alternative

working directory for the COPY command, you can use the —chdir parameter. This option allows you to give a relative path to the source directory by changing the working directory before copying files.For instance, if you wish to run a Dockerfile located in the directory /home/user/myapp.

4) BUILD THE IMAGE OF DOCKER:

The process of constructing a package with all the dependencies and configurations necessary to operate a particular application or service is known as "building a Docker image." A Dockerfile, a text file containing all the instructions required to generate the image, is the starting point from which Docker images are created.

The docker build command can be used to construct the image once the Dockerfile has been produced. This command generates a new image with the supplied configurations by reading the instructions from the Dockerfile.
With the help of command: docker build -myapp .

4)IMPLEMENTING DOCKER-COMPOSE:

A tool called Docker Compose enables you to create and execute multi-container Docker applications. The services, networks, and volumes that make up your application are specified in a YAML file. You may quickly spin up many containers for various components of your application and control how they interact with each other using Docker Compose.

With the docker-compose command, you may manage your application after creating the YAML file. For instance, the docker-compose up command can be used to launch every container specified in the YAML file. By doing this, the containers will be created and connected to the designated networks and volumes.
Command for creating compose file:docker-compose up
Command for stopping compose file:docker-compose down

5) RUNNING THE APPLICATION WITH REQUIRED PORT:

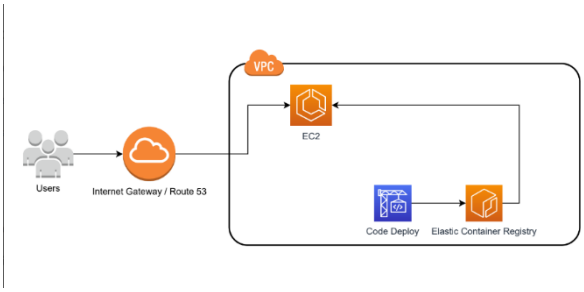
A web application that is running inside of a Docker container does so in a virtualized environment that is separate from the host machine. This implies that in order to access the application from outside the container, port mapping is required.

While running a container, you can use the -p flag to map its port to a port on the host system. The following command can be used to map a port, for instance, if your web application listens on port 8080 inside the container to port 8000 on the host system.

By mapping port 8080 inside the container to port 8000 on the host system, this programme starts a container from the image myapp. The web application can then be accessed by launching a browser and going to http://localhost:8000.

Command for running app: docker run -p 8000:8080 myapp .

UPLOADING THE WEB APPLICATION TO THE AWS EC-2 INSTANCE:



1)Make sure your web application is ready to use without any errors and make sure it satisfies the required functionality, then containerize it in docker after that install all the required dependency.

2)Create an aws account and give the required credentials and after that we need to create a repository in ecr (elastic container registry where we can store the application.

3)We need to push the web application to the repository specifically the docker container so that it ease the process of uploading or even while transferring.

4)Configure ec2 instance as per your requirement accordingly to your application, be it scaling ,traffic ,congestion or even security.

5)Then we need to transfer the files in ecr to ec2 instance where it would be deployed. Then we can run the container After which the application will start to deploy.

6)We can acess the web application with the help of the Domain name of the instance.

This marks the end of the methodology and the completion of the hosting.

HOW CAN THIS PROJECT BE IMPROVISED?

With its user-friendly interface, scalable design, and creative use of Docker and AWS Cloud technologies, Hire World provides a useful tool for businesses trying to find and hire the best people. The application's capabilities could be increased in the future, and new features could be added to further simplify the hiring procedure.

1.Implement a load balancer and auto-scaling group in AWS to ensure that the application can handle increased traffic and maintain high availability.

2. Use AWS RDS or another cloud-based database service to improve scalability and reduce maintenance costs.

4. Implement monitoring and logging using tools such as AWS CloudWatch or ELK Stack to gain

insights into application performance and identify potential issues.

5. Implement authentication and authorization using a third-party service such as Okta or Auth0 to improve security and simplify user management.

6.Consider using serverless computing with AWS Lambda to reduce costs and improve scalability.

7.Implement automated backups and disaster recovery procedures to ensure data integrity and availability.

You may enhance the performance, scalability, and security of your Hire World application as well as give users a better experience by putting these and other best practises for web application development into practise.

CONCLUSION:

In conclusion, Hire World is a web application built with PHP, Docker, HTML, and CSS as its major programming languages that aims to assist businesses in finding and hiring the top talent using Docker and AWS Cloud technologies. The Hire World application was created using a user-centered methodology that was informed by requirements gathering, design, implementation, and testing, as well as data gathering and analysis.

Candidate profiling, job advertising, and applicant monitoring are just a few of the features and functionality that the Hire World application offers to simplify the hiring process. More flexibility, scalability, and dependability are made possible by the use of Docker and AWS Cloud technologies, allowing the application to manage enormous volumes of data and react to changing customer needs.

Overall ,With its user-friendly interface, scalable design, and creative use of Docker and AWS Cloud technologies, Hire World provides a useful tool for businesses trying to find and hire the best people. The application's capabilities could be increased in the future, and new features could be added to further simplify the hiring procedure.

REFERENCES:

[1] "Continuous and Integrated Software Development Using DevOps", International Conference on Advances in Computing and Communication Engineering, June 2018. Aayush Agarwal, Subhash Gupt, and Tanupriya Choudhury.

[2] "Cloud Computing Security: Amazon Web Service", Fifth International Conference on Advanced Computing & Communication Technologies, 2015. Saakshi Narula, Arushi Jain, and Ms. Prachi.

[3] Richard Sinnott and Arnaldo Pereira Ferreira, "A Performance Evaluation of Containers Running on Managed Kubernetes Services", IEEE International

Conference on Cloud Computing Technology and Science, December 2019.

[4] GitHub Actions, "https://docs.github.com/en/actions/learn-github-actions/understanding-github-actions"

[5]Amazon Web Services, "https://www.techtarget.com/searchaws/definition/ Amazon-Web-Services"

[6] Docker, available at "https://www.ibm.com/in-en/cloud/learn/docker"

[7]YAML is a data serialisation, not a document format, according to https://www.redhat.com/en/topics/automation/what-is-aml#::text=YAML%20is%20a%20data%20serialization.

[8] Shimon Ifrah, "Deploying Containerized Applications with Amazon ECS. Use AWS to deploy containers. 2019; 83–133; Berkeley, CA: Apress. "Using Amazon ECR Images with Amazon ECS" [Online] [9]. You can access it at https://docs.aws.amazon.com/AmazonECR/latest/userguide/ECR-onECS.html.

[9] "Using Amazon ECR Images with Amazon ECS" [Online]. Available https://docs.aws.amazon.com/AmazonECR/latest/userguide/ECR-onECS.html

[10]. A Beginner-Friendly Introduction to Containers, VMs and Docker. Available online: https://www.freecodecamp.org/news/abeginner-friendly-introduction-to-containers-vms-and-docker-79a9e3e119b/

[11] Most Important Considerations when Choosing a Web Development Framework; 2009. Available:http://code.tutsplus.com/tutorials/15-most-important-considerations-when-choosing-a-web-development-frameworket-8035.

[12]. W3Techs.

Usage of server-side programming languages for websites. Available: http://w3techs.com/technologies/overview/programming_language/all.