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# Descriptive Analysis

Project Description

This project is regarding the knowledge of how students finish their courses in a program. We get to learn more about the courses completed or under progress or not completed by studying the records of the students. We will be able to see useful patterns and trends by reviewing the data. These trends allow us to realize how students are performing and what issues they might be experiencing. The research can also assist the school in terms of making better decisions that would assist the students to learn better.

Project Title

Understanding Student Course Completion Patterns in Academic Programs

Objective

The primary objective of the given project is to study with the close attention student course completion records. We want to know the number of students who complete their courses, those who are yet to complete their courses and those who have not completed their courses. Through this, we want to identify valuable information that could assist the schools to enhance their programs. This can assist the teachers and staffs in knowing in which areas students need greater assistance and which courses might require revision. Future planning and activities that assist the students can also be based on the results.

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Dataset

The data has 50 records of complete course. The set of fields of each record are the unique ID, student ID, course ID, course completion status and date. It can either be Completed, In Progress or Not Completed. The dates have been put in a special number format, which has to be converted into normal format of date to be analyzed. Different codes have been used to mark the courses where C001, C005, and C009 are some of them. Through these codes, one is able to know what course a particular record is about. The data allows one to get a clear impression of the state of a student in his or her courses and is helpful in basic progress and trend analysis.

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## Methodology

In order to start the project, a CSV and JSON file of the course completion data was used in loading the data into a computer program with the help of some tools such as AWS. The dates were represented in the form of numbers, hence were converted into normal date format such that we are more knowledgeable about them. Subsequently, verification of data was done. All records which contained issues such as repetition or incorrect values were rectified or deleted. Following this, the analysis of data was ready.

Our aim was to view the satisfaction level of completion of the course of each student and we attempted to realize the number of students who have completed the course, those who are still continuing and those who have not completed the courses. The process of grouping data according to courses and dates was also done in order to identify trends. So through such a manner the data was then cleaned and prepared in such a manner that we were able to comprehend the results and we provided appropriate answers to this based on the actual data.

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# Descriptive Statistics

Having cleaned the data we simply counted the number of records that reported Completed, In Progress or Not Completed. The finding revealed that most of the students were still on course with their courses and fewer ones had already made progress. It also contained a huge number of drop out students. Certain courses such as Course C005 and C001 had bigger numbers of students passing them. In other courses e.g. C006 and C003, there were higher numbers of students with incomplete. The student load in a course also assisted us to comprehend the tougher or longer courses. We discussed the dates to determine whether there are months or periods of the years when more students complete their courses.

In order to simplify the findings, we prepared various kinds of charts. To indicate the number of students who completed their courses with time, a line graph was adopted. This made us understand whether the completions were increasing or decreasing throughout the year. Bar chart indicated the courses that were completed the most. This simplified the comparison of one course and other. The pie chart illustrated the percentage of each course status such as the number of courses completed, in progress or not completed. This provided a clear picture of performance of the students at large. We also applied heatmap to demonstrate the time when the majority of students were being active. This heatmap would allow us to identify the busy periods among the students because it represented different activity using color.

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In this section of the work, the students were divided according to the way they have done their studies. There were students who passed their courses, there are those that are in the process of doing it and there were those who failed to finish. The students who have already gone through their courses are making good progress and they might not require additional assistance. The ones that are yet to be completed may be taking longer or experiencing certain difficulties. Individuals who failed to accomplish may require assistance or transformation in course delivery. We also examined the number of courses which each student tried and number completed. This assisted us to know the active students and the ones that we may give attention. Such a grouping of students may enable the schools to understand which students require help and which courses are difficult to complete.

Based on the data, we realized that a great number of students were still undergoing their courses. It implies that they are spending time in order to complete or courses take more time to complete. Other students took short time to complete their courses. Lots of students had also failed to finish the courses which may be a burden to the school. In some courses many did complete it and in some many did not complete. Like, Course C005 and C001 performed better, but Course C006 there were more students who had not completed. It was also established that completion of a course also varied according to the month. There were times of a year which were more complete than others. This may be due to contingency of school or plans of students. These results indicate in what lies better performance and improvement.

Going by the results, it is suggested that the school considers the poorly complete courses and attempt to determine the reason why students are not completing the courses. The school can equally avail additional support or assistance to students who are making too long or dropping out. In subjects that have a lot of learners going through it, the instructors will be in a position to validate whether the work is too challenging or the students require more time. The results can also be improved by carrying out better planning during these busy months. These measures should assist more students to finish their courses and enhance the general performance of students.

## Tools and Technologies

To complete this project, we applied tools that are useful in analysis of data and drawing of charts. It was employed through the AWS basis since it is good in working with data. It assisted to clean the data in order to make it ready to be analyzed. The table of data was worked on with the help of AWS libraries, and older to generate charts such as bar charts, line graph, and pie charts. The data on these charts could easily be understood and presented in an appropriate manner. At the onset of the work, they also used Excel to get a brief glimpse of the data and get a feel on whether there were missing and duplicated entries. The tools are helpful to demonstrate findings with the teachers or the staff of the school in an easy and pleasant manner. The technologies made it simpler to execute the project and also gave clear illustration of the findings.

## Deliverables

The end product of this project is a comprehensive report which describes the methodology used in the study of the data and its findings. This report discusses the objectives of the project, how the data was cleaned and analyzed and what the data revealed regarding student course completion. Charts and graphs are also provided with the representation of crucial facts, such as the most completed courses and the time when most students complete their courses. These graphs make the report simple to read. In addition to the report, we have made a presentation too, suggesting the primary findings and recommendations. This presentation is capable of assisting the school leaders to develop an appreciation of the problem and how to proceed with the problem. All the findings are presented in a relatively simple and concise manner in order to help plan the school better.

The project aided to know the progress that the students were making in their coursework. Through the observation of the data, we could see that a great number of students still have the courses to do, with some of them failing to finish them by the end. We also realized that there were courses whose results are more superb than others. The groupings and charts of the students provided us with a clearer understanding of the issues and where assistance is required. Using this knowledge, the school will be in a position of making adjustments so that students complete their courses.

# AWS Deployment and Service Models

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The present diagram illustrates the visual representation of main essence of the ideas, associated with the topic of cloud computing, in four primary areas, including the introduction to the world of cloud computing, its benefits, introduction of the Amazon Web Service, and Amazon Web Service Cloud Adoption Framework (CAF). Every section contains lists of the associated terms or topics, and the learners can grasp how simple principles of clouds can be the foundations of more complex AWS-specific strategies. The architecture emphasizes the rational sequence of cloud training, beginning with the basic concepts, and finishing with a tactic cloud transfers based on AWS (Weinman, 2012, p. 23).

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This outline will look at a side by side comparison of two deployment models such as the traditional computing model and the cloud computing model. Conventionally, an organization is utilizing its own physical data centre, like the UCW Data Centre, in Vancouver, by which the complete infrastructure, location and environment setup is conducted manually and physically on-site. Conversely, cloud computing model involves using the global infrastructures of AWS. In this case, the infrastructure is based on launching a cloud account, choosing a geographical location (Virginia), and then installing the working environment of the registrar in this region. This points to the nature of cloud computing that hides physical constraints to effect scalable, location-independent deployment and greatly simplifies the management of infrastructures and facilitates accelerated innovation (Vaquero, Rodero-Merino, & Caceres, 2011, p. 52).

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This is used to compare the various deployment models of cloud and their approach to location, access and privacy of data. A Private Cloud has a storage location on-premise and full organizational possession of the datasets where privacy and internal access are highly limited. On the contrary, the Public Cloud stores the information on a provider such as AWS infrastructure, which has a broader access with moderate levels of privacy, governed by provider-level policies. Hybrid Cloud is a mix of these two strategies, which enables the organizations to separate on-prem and cloud by positioning that organizations can provide partial access and customizable levels of privacy according to the needs of workloads. Finally, the Multi Cloud model transfers information to several cloud providers and allows complex access policies and various privacy implementations depending on the selected vendors. This is flexibility enables organizations to deform their cloud strategy to the requirements of the operations, security as well as compliance requirements (Armbrust et al., 2010, p. 54).

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This case study gives an outline of the three main types of cloud service: Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS) demonstrating how roles and duties are divided among the service provider (AWS) and the customer (Registrar operation team). The cloud provider in IaaS delivers the virtualized computer infrastructure including CPU, storage, and network and leaves everything else to the customer which would include the platform and software. With PaaS, the provider is concentrating on the underlying infrastructure and platform, whereas the customer is only worried about deployment and management of applications and data. Lastly, in SaaS, the provider looks after the whole stack which means the application, whereas the customer merely utilizes the software. The more you go to SaaS the less control and responsibility you have, and that also affects the location, access and controls over the specific dataset (Rountree & Castrillo, 2013, p. 17).

# AWS Cost Analysis

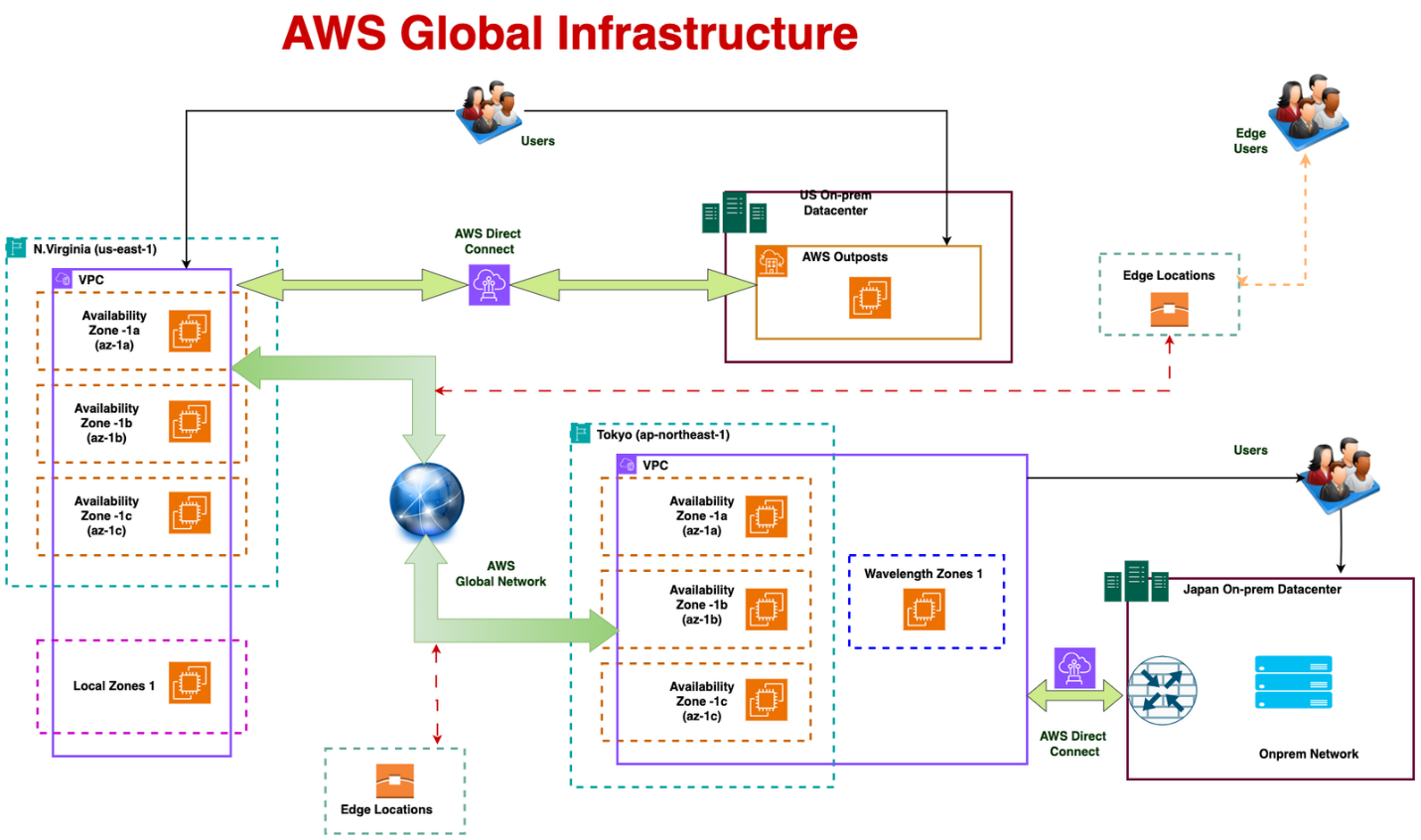
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In this diagram, there are five main conceptual areas regarding AWS billing, pricing, and support. In the initial segment, the author informs the reader about the pricing model of AWS and focuses on a pay-as-you-go approach and other cost-saving models, including reservations, tiered usage, and custom pricing. The second part is devoted to Total Cost of Ownership (TCO), the comparison between the cloud and on-premises infrastructure and how to use the AWS Pricing Calculator to evaluate costs. Part three plunges into AWS Organizations and explains the organization units, access, security, and feature advantages. The fourth part describes how to manage cost, such as dashboard, billing tools, forecasting usage, and reporting. Finally, the last section, section five, about AWS technical support, is presented, overviews support plans, and case severity system according to which the response time operates. The combination of these sections can serve as a basis of mastering AWS billing and support practices.

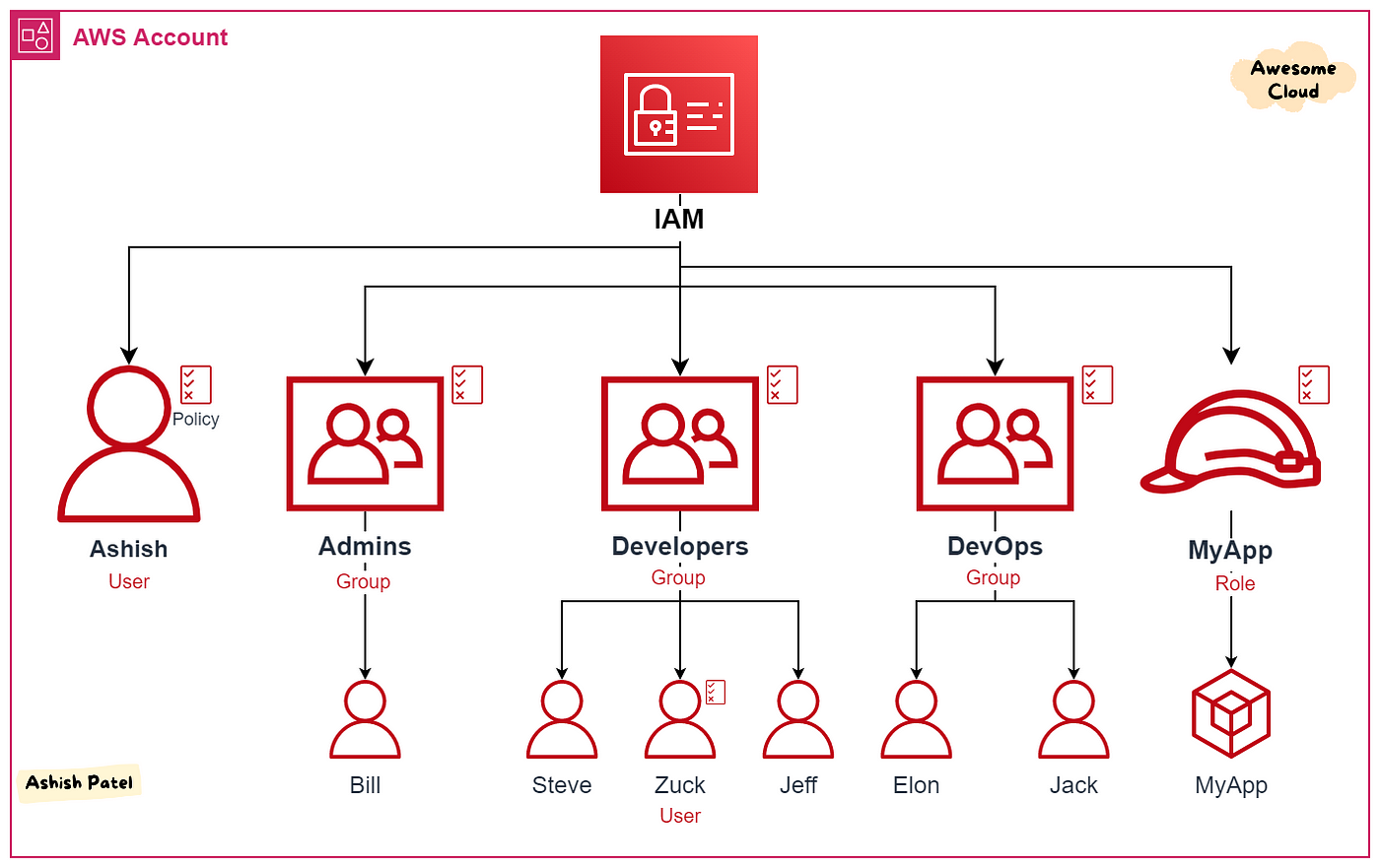
# AWS Global infrastructure

AWS has an international system that assists the users in enjoying the services in various parts of the globe. It has numerous data centers that are located in different regions and availability zones. This arrangement assists the users to receive quick and quality service. It also facilitates the storage and insertion of data on a safe fast manner.



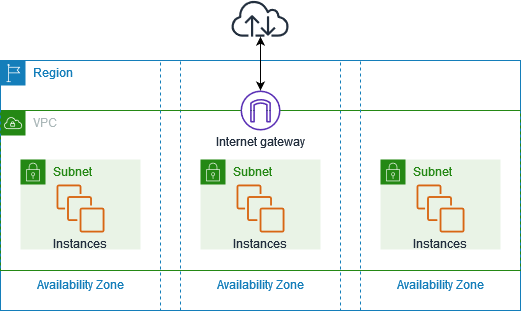
# AWS IAM

Containing the control of who may access the AWS resources, AWS IAM is a service. It allows the user to generate accounts and accord them only the required permissions. This assists in maintaining safety of the system. Using IAM, the user can permit or deny the actions on the individual or a group of people.



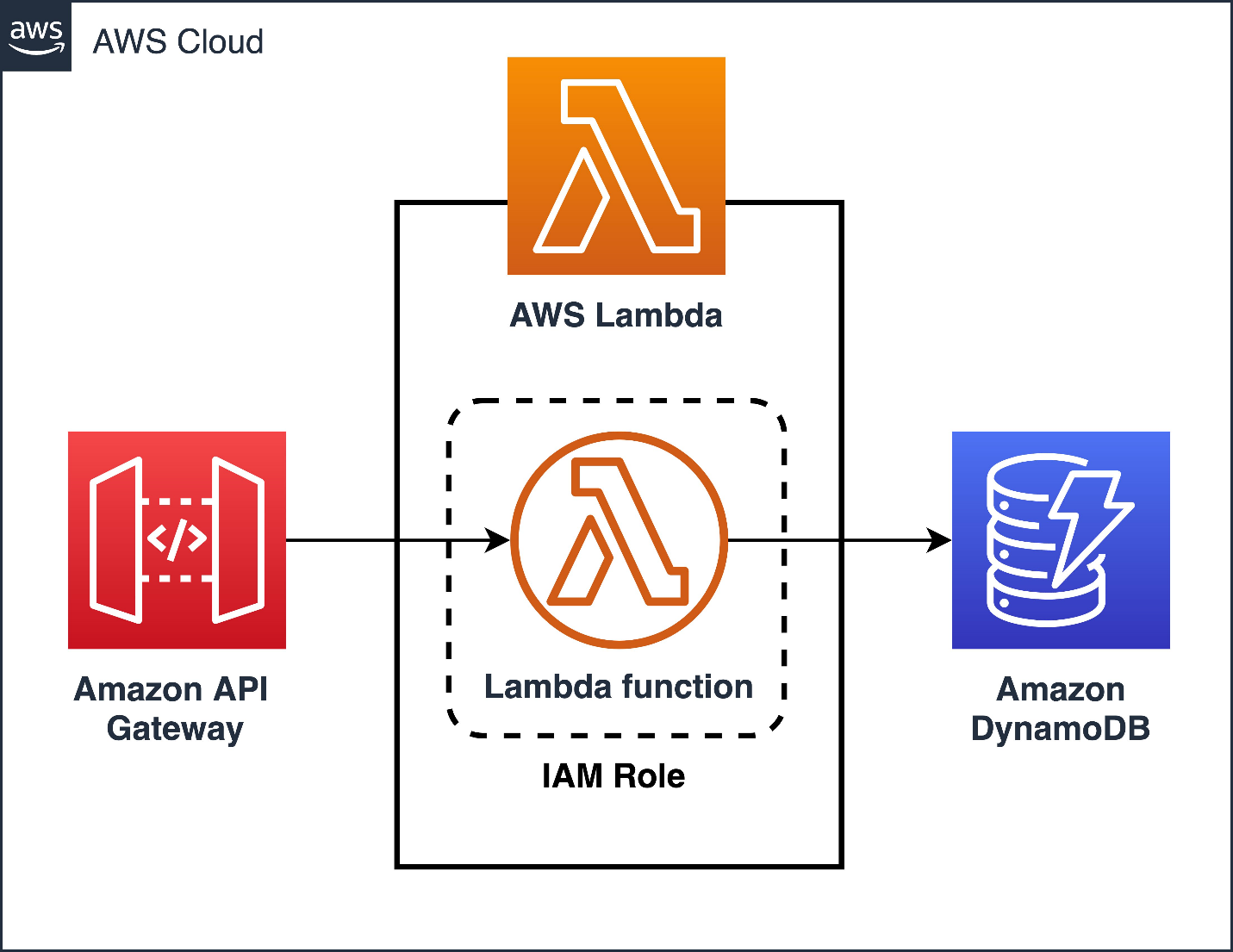
# AWS VPC

AWS VPC can be considered a personal cloud network. It allows user to have complete control to the network settings including IP address and traffic rules. Using VPC, the user can manage and protect his data and control the flow of data between the cloud and on-premise.



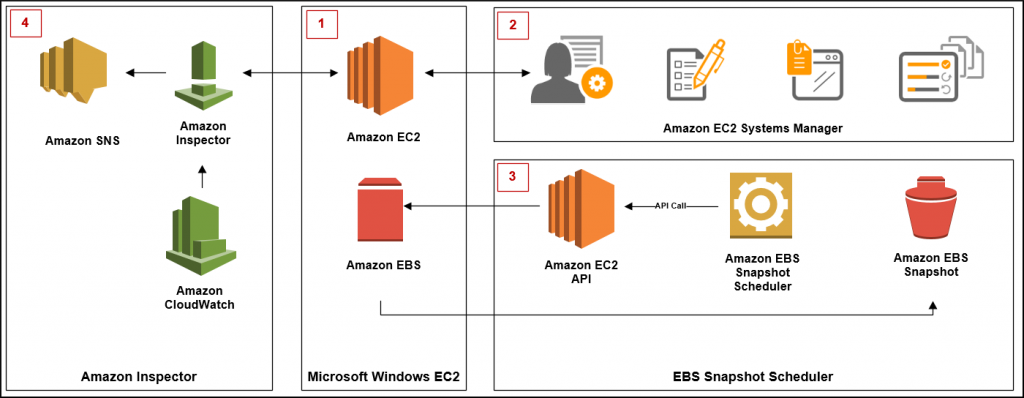
# AWS Lambda

AWS Lambda comprises a service whereby code is executed, without using a server. The user creates the code and defines when he/she wants it to be executed. Everything else is covered by AWS then. It is practical in that one can only pay to run the program and not acquire an entire server.



# AWS EBS

AWS EBS is a block storage facility compatible with EC2 virtual computer. It provides speedy and consistent storage of information that requires long term storage. EBS may be employed in storage of files, execution of databases, or y storage of backup information.



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