

Amazon Prime Video : Tour Learning

Tour Objectives: Students will learn how computer science and technology come together to bring Prime Video to life. Students will also be able to meet and hear about the engineering careers who enable this technology

Key Vocabulary:

The following vocabulary will be introduced in audio and visual format during the tour:

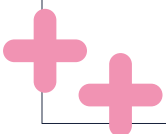
- **Stream:** Using a computer app to access a large library of media on demand
- **Distribute:** The process of sharing content across multiple online channels
- **Innovation:** Innovation is the process of creating something new or improving upon existing ideas, products, services, or processes in ways that bring value to individuals, organisations, or society as a whole.
- **Content acquisition:** Gaining the rights to stream or distribute content
- **Content ingestion:** The process of acquiring, importing, and preparing digital content for storage, management, and distribution within a system or platform
- **Cloud:** Cloud computing is the on-demand availability of computer system resources, especially data storage (cloud storage).
- **Server:** A computer whose function is to store, process, send, or receive data
- **Content Delivery Network (CDN):** Content Delivery Networks - A CDN is a network of servers that caches content close to end users, improving website performance, security, and reliability.
- **Metadata:** Data about data. For example, titles, images, info about actors etc. Provides context to the content.
- **User Experience (UX):** The way a customer feels and thinks when using a game, website, or app
- **User Interface (UI):** The part of the platform that users engage and interact with
- **Front end:** The part of the app that users interact with
- **Back end:** The "backend" refers to any part of a website or software program that users do not see.
- **Data:** Data refers to raw facts, figures, or information that are collected, stored, and analysed to derive meaning or insights.
- **Software development engineering:** Software engineers apply the engineering design process to design, develop, test, write, maintain, and evaluate computer software.
- **Artificial Intelligence (AI):** Artificial Intelligence (AI) is a branch of computer science that focuses on creating systems or machines capable of performing tasks that typically require human intelligence.
- **Machine learning:** Machine learning is a subset of artificial intelligence (AI) that involves building systems or algorithms that can learn from data and improve over time without being explicitly programmed.
- **Machine learning model:** An ML model is a set of algorithms that can learn from data and generalise to unseen data, and thus perform tasks without explicit instructions.
- **Device Farm:** An application testing service that lets you improve the quality of web and mobile apps by testing them across an extensive range of desktop browsers and real mobile devices; without having to provision and manage any testing infrastructure.
- **Beta experiment:** In software development, a beta experiment involves releasing a version of the software to a limited group of users, often called beta testers, who use the product and provide feedback
- **Customer obsessed:** One of the Amazon Leadership Principles which means always starting with the customer in mind and working backwards from them



Key Student Learnings:



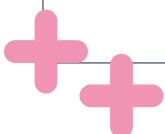
Stop:	Stop Questions:	Teach Computing standard/s and Key Learnings:
<p>0 - Why is Prime Video Important?</p>	<p>1) How did things used to be before streaming?</p> <p>2) What is a streaming platform, and how does it differ from traditional methods of consuming media?</p>	<p>Impact of technology - understand how individuals, systems, and society as a whole interact with computer systems</p> <p>First of all, what is Prime Video and what does it mean to stream content? Prime Video is a streaming platform that refers to a service that delivers media content, such as movies, TV shows, music, and more, over the internet, allowing users to access it in real-time without downloading the content to their device.</p> <p>Prime Video represents a significant shift from the traditional ways of consuming media, where viewers had to physically rent or purchase DVDs from stores. Now, with Prime Video, users can instantly access a vast library of content from the comfort of their own homes anytime they want.</p> <p>This stop will lay the foundations for what students will learn about on the Career Tour. From the processes that go on behind the scenes of Prime Video, such as content acquisition, content ingestion, app development, etc, to the careers involved in bringing Prime Video to life including software development engineers, content acquisition managers, producer managers, etc, students will get a real sneak peek at life at the streaming company.</p>
<p>1 - Content Acquisition</p>	<p>1) What are the different processes/stages involved in Amazon Prime Video?</p>	<p>Creating media - select and create a range of media including text, images, sound and video.</p> <p>This stop will teach students what content acquisition entails. They will discover that acquiring content is more than just sourcing cool titles for Prime Video, it's also about acquiring the rights to stream (storing content in a Cloud system where it can be accessed by users) and distribute it (sharing the content with the audience through various channels) on Prime Video's platform.</p> <p>By completing this stop, students will recognise the importance of content acquisition in building and maintaining a diverse and engaging content library. This is crucial for attracting and retaining subscribers and ensuring a positive user experience.</p> <p>Students will learn about the roles and responsibilities of Prime Video's legal team, which is in charge of sourcing content, building relationships with producers and distributors, negotiating rights with content owners, and finalising licensing agreements with producers</p> <p>Once content is licensed, it's ready to be integrated into Prime Video storage and made available for streaming.</p>
<p>2 - Content Ingestion</p>	<p>1) How does content get from the studio / storage to Prime Video?</p> <p>2) Where is it stored?</p>	<p>Data and information - Understand how data is stored, organised and used to represent real-world artefacts and scenarios.</p> <p>Computer networks - Understand how networks can be used to retrieve and share information, and how they come with associated risks.</p> <p>Okay, so content is sourced and Amazon now has a license to stream and distribute it, but where is it stored? Students will learn that Prime Video's diverse library of content hosted on the platform, ranging from Amazon Originals to live events like sports, is all stored securely in Amazon S3, a cloud storage service.</p> <p>After learning about where content is stored, students will explore how content is delivered to users. In other words, how the content goes from its storage space to being available on the Prime Video app. This is thanks to Content Delivery Networks (CDNs), which are networks of servers that cache content close to end users. Prime Video's customers are based all over the world; depending on where they live, they will have a specific CDN. To ensure seamless streaming experiences worldwide, Prime Video improves delivery by selecting the nearest CDN to each user's location.</p> <p>What's more, in this stop students will that not only is Prime Video's content ingested in the cloud, but also metadata, the behind-the-scenes data that enriches user experiences with contextual information about the content.</p>



Key Student Learnings:



Stop:	Stop Questions:	Teach Computing standard/s and Key Learnings:
<p>3 - App Development</p>	<p>1) What roles come together to create an app that can showcase tonnes of media?</p> <p>2) What are the different processes that go on behind the scenes to create the app?</p>	<p>Design and development - Understanding the activities involved in planning, creating, and evaluating computer artefacts.</p> <p>We know the content lives on a server, but users need an app to play the videos! So, with that in mind, how do different departments come together to create an app that showcases tonnes of diverse media and creates a positive user experience?</p> <p>In this stop, students will discover how Product Managers set the product vision and decide on features. Product Managers ask questions like: What is the goal of this product? Who are the target users? What problems does it solve? Based on this vision, they create a long-term roadmap for the app—a detailed plan that outlines the development and release of product features over time.</p> <p>Once the vision and roadmap are set, Product Managers drive various teams to execute this plan, coordinating with engineers, designers, and other stakeholders to ensure everyone is working towards the same goals.</p> <p>Some of the roles Product Managers work with are:</p> <p>User Experience (UX) Designers, who are responsible for shaping the user experience, which is essentially the look, feel and accessibility of the app. They make sure the front end (the part of the app users see) is accessible and consistent across various devices.</p> <p>User Interface (UI) Engineers, like UX Designers, are responsible for how the front end of the app looks for users. UI Engineers then turn designs into functional app components, writing code for seamless streaming on different devices.</p> <p>Back-end Software Engineers are responsible for making sure all the content, including its metadata, is pulled through from storage so that users can access it when they stream on the app.</p> <p>This overview demonstrates the collaborative effort needed to turn Prime Video's vision into a live, functioning app.</p>
<p>4 - Machine learning</p>	<p>1) What is machine learning?</p> <p>2) What role does machine learning play at Amazon Prime Video?</p>	<p>Algorithms - be able to comprehend, design, create and evaluate algorithms</p> <p>Firstly, what is Machine Learning (ML)? ML is a subset of Artificial Intelligence (AI) that enables systems to automatically learn and improve from experience without being explicitly programmed.</p> <p>In the context of Amazon Prime Video, machine learning algorithms are used to analyse vast amounts of data to extract meaningful insights, make predictions, and enhance the user experience.</p> <p>Machine learning engineers at Amazon Prime Video play a crucial role in developing and deploying machine learning models to solve complex problems. This stop will look at how ML engineers design and implement machine learning algorithms and models, collaborate with cross-functional teams to integrate machine learning solutions into PV, monitor and evaluate model performance and make improvements as needed.</p> <p>In terms of ways ML improves Prime Video, we will look at three areas:</p> <ul style="list-style-type: none"> • Using ML to synchronise subtitles to improve user experience • ML to prevent spelling errors in subtitles • ML to ensure video quality



Key Student Learnings:



Stop:	Stop Questions:	Teach Computing standard/s and Key Learnings:
<p>5 - Testing at Amazon Prime Video</p>	<p>1) Who/what technology is responsible for ensuring the app works on all devices?</p>	<p>Programming - create software to allow computers to solve problems</p> <p>Why does the app need to be tested? In this stop, students will gain a comprehensive understanding of why testing is paramount for ensuring a seamless user experience. By testing the app on multiple devices, it allows QA engineers to spot any bugs and fix them before they affect customers.</p> <p>What technology is used to test the Prime Video app? Students will discover what Amazon's Device Farm is. Device Farm is an application testing service that lets you improve the quality of web and mobile apps by testing them across an extensive range of desktop browsers and real mobile devices; without having to provision and manage any testing infrastructure.</p> <p>In other words, Device Farm is like a huge collection of real mobile devices you can use remotely. You upload your app to AWS Device Farm, and it runs your app on lots of different devices automatically. Then, it gives you feedback on how your app performs on each device.</p> <p>The stop will also illuminate the diverse array of careers associated with testing, offering insights into the roles of QA engineers, software development engineers (SDEs), infrastructure engineers, and product/programme managers.</p> <p>By exploring these career paths, students will not only grasp the technical aspects of testing but also appreciate the collaborative efforts and multifaceted skill sets required to uphold quality standards in app development and user satisfaction.</p>
<p>6 - Using data to make Prime Video better</p>	<p>1) How is customer data/feedback collected?</p> <p>2) How does Amazon Prime Video measure customer satisfaction?</p>	<p>Design and development - Understanding the activities involved in planning, creating, and evaluating computer artefacts.</p> <p>Why is collecting customer data important? In this stop, students will gain insight into how Amazon Prime Video collects and utilises customer data to enhance the user experience. Through the perspective of product managers, students will understand the process of analysing data to prioritise customer needs and plan future improvements.</p> <p>They will learn about Amazon's customer-centric approach, embodied in its Leadership Principles, with a focus on customer obsession.</p> <p>How does Amazon measure customer satisfaction? Students will discover how Amazon gathers data from various sources, including customer anecdotes and monitoring data, to continuously refine the Prime Video service.</p> <p>The stop also demonstrates Amazon's commitment to experimentation, allowing real customers to beta-test new features and providing valuable feedback for decision-making.</p> <p>By the end, students will have a comprehensive understanding of Amazon Prime Video's data-driven culture and the importance of customer feedback in shaping its development.</p>
<p>7 - Recap</p>	<p>1) How does PV turn from a vision to a reality?</p>	<p>This stop will briefly answer the tour's overarching question: How do different technology and engineering roles come together to bring Amazon Prime Video to life? And the phenomena question: How does content from film/TV studios end up streaming on Amazon Prime Video?</p> <p>By the end, students will have a comprehensive understanding of Amazon Prime Video's data-driven culture and the importance of customer feedback in shaping its development.</p>

