Microsoft Azure AI Fundamentals: Document Intelligence and Knowledge Mining

Cheat sheet

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Describe Artificial Intelligence workloads and considerations (15–20%)

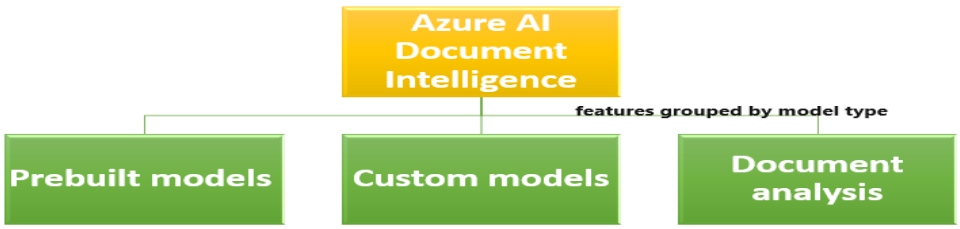
Identify document intelligence workloads.

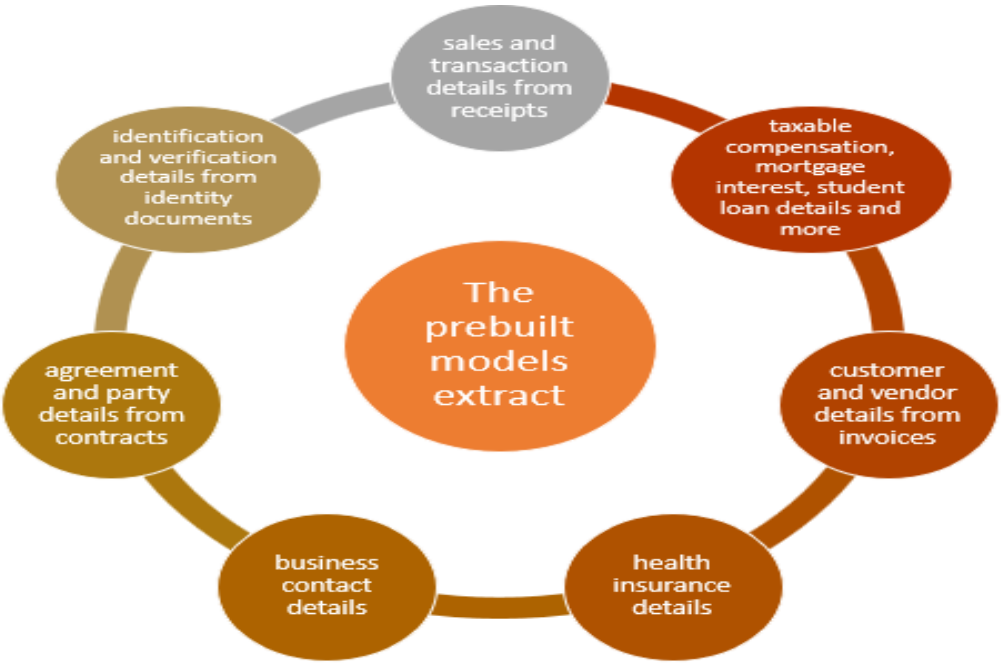
Fundamentals of Azure AI Document Intelligence:

Introduction:

- Document intelligence refers to AI capabilities for processing and understanding text in documents.
- It extends beyond OCR by automating the extraction, comprehension, and storage of data from text.
- Manual entry processes, like inputting information from receipts, can be streamlined using document intelligence.
- The technology involves scanning receipt images with OCR to identify and categorize specific data such as merchant details, total value, and tax information.
- Azure AI Document Intelligence supports these capabilities and offers features for analyzing documents and forms.
- It includes both prebuilt and custom models to enhance efficiency in handling large volumes of textual information.
- The application of document intelligence is particularly useful for tasks such as expense claims and accounting purposes.

Receipt analysis on Azure





The prebuilt receipt model processes receipts by	Matching field names to values
	Identifying tables of data
	Identifying specific fields, such as dates, telephone numbers, addresses, totals, and others

Exercise - Extract from data in Document Intelligence Studio

https://documentintelligence.ai.azure.com/studio

AI Document Intelligence

1. Where is it available?

   Check Azure AI Document Intelligence availability.

2. What types of documents does Azure Azure AI Document Intelligence work with?

   It supports printed and handwritten forms, PDFs, and images.

3. What languages does it support?

   Azure AI Document Intelligence supports multiple languages including English, French, German, Italian, Spanish, Portuguese, Dutch, Chinese, Japanese, and Korean. See full list here.

4. What is the difference between custom and prebuilt feature?

   The custom option uses five samples to learn the structure of your documents and intelligently extract text and data tailored to them. The prebuilt option doesn't use samples—the model has already been trained and is ready to use off the shelf to extract key fields from specific document types.

5. What is the layout feature of Azure AI document Intelligent?

   Layout extracts text using high-definition optical character recognition (OCR) tailored for documents. It also extracts the structures of tables (row and column numbers), selection marks and more.

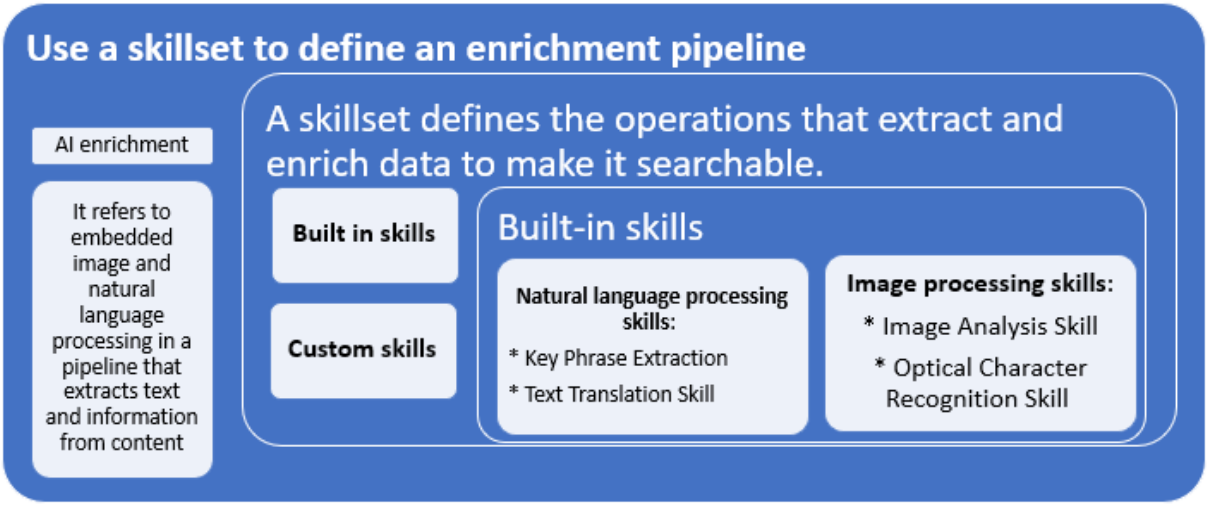
Describe Artificial Intelligence workloads and considerations (15–20%)

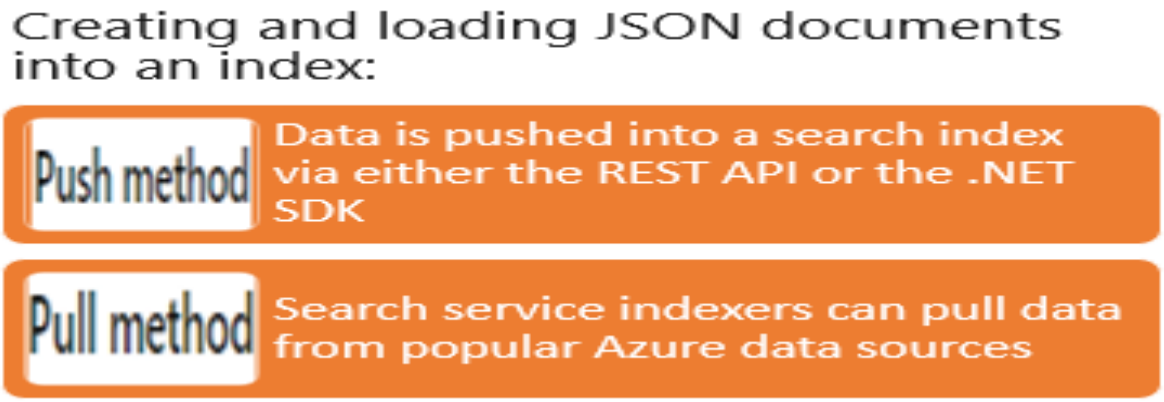
Identify knowledge mining workloads.

Fundamentals of Knowledge Mining and Azure AI Search:

Explore Azure AI Search

• Challenge of Unindexed Documents:	Despite the ease of online searches, finding information in unindexed documents remains a challenge. Unstructured, typed, image-based, or hand-written documents often require manual review for data extraction.
• Knowledge Mining Solutions:	Knowledge mining involves automating information extraction from large volumes of unstructured data. Azure AI Search is an example of a knowledge mining solution.
• Azure AI Search Features:	Cloud search service with tools for building user-managed indexes. Indexes can be used for internal purposes or to enable searchable content on public-facing internet assets.
• Utilizing AI Capabilities:	Azure AI Search integrates with Azure AI services. Utilizes image processing, content extraction, and natural language processing for knowledge mining.
• Benefits of Azure AI Search:	Enables indexing of previously unsearchable documents. Rapid extraction of insights from large data sets is made possible.

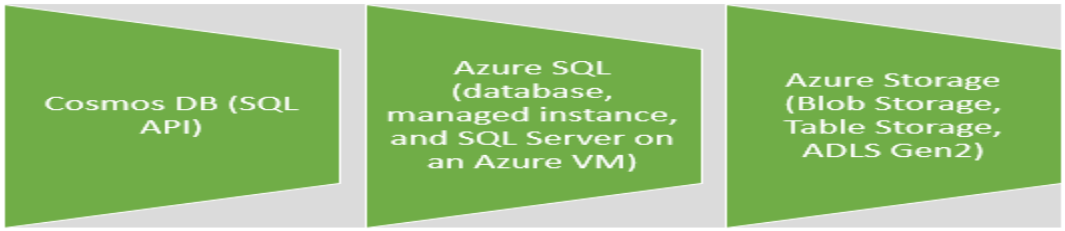




Create an Azure AI Search index.

Make your data available in a supported data source before using an indexer to create an index.

Data Sources:



Import data to the index.

Import data wizard automates processes in the Azure portal to create various objects needed for the search engine.

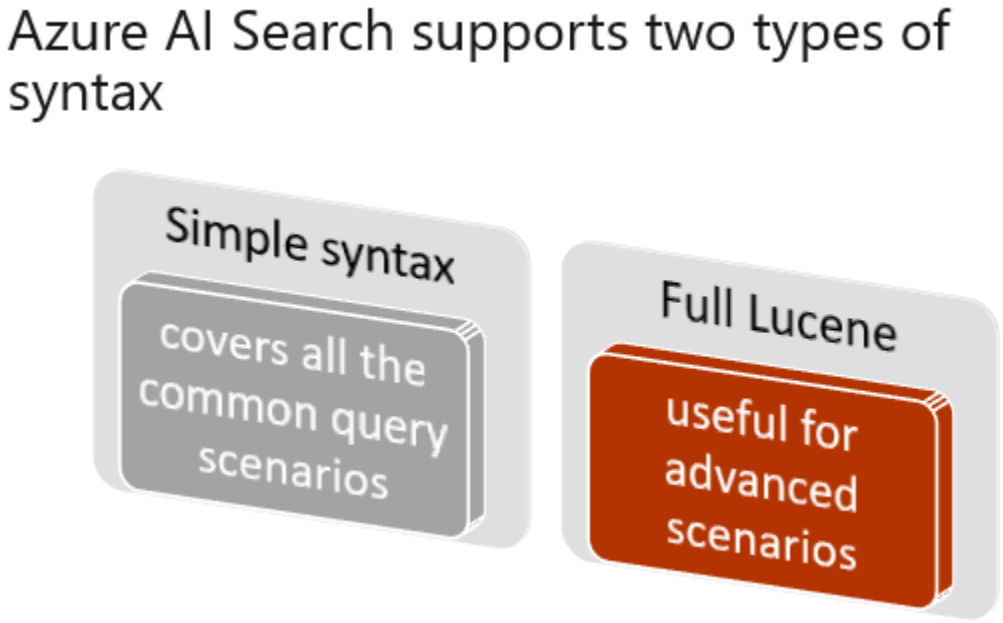
The objects that could be created in the Azure portal.

Data Source	● Persists connection information to source data, including credentials. ● used exclusively with indexers.
Index	● Physical data structure used for full text search and other queries
Indexer	● A configuration object specifying a data source, target index, an optional AI skillset, optional schedule, and optional configuration settings for error handling and base-64 encoding.
Skillset	● A complete set of instructions for manipulating, transforming, and shaping content, including analyzing and extracting information from image files.
Knowledge store	● Stores output from an AI enrichment pipeline in tables and blobs in Azure Storage for independent analysis or downstream processing.

Query the Azure AI Search index.

- The schema of the index determines what queries can be answered.
- Azure AI Search queries
    - Submitted as an HTTP or REST API request.
    - Response coming back as JSON.
- Queries can specify the following:
    - What fields are searched and returned?

    - How are search results shaped?
    - How the results should be filtered or sorted?
- If the fields are not specified, the query will execute against all the searchable fields within the index.



Query syntax documentation.

Knowledge Check:

Question	Options
1. Which two prebuilt models allow you to use the Azure AI Document Intelligence service to scan information from international passports and sales accounts? Each correct answer presents part of the solution.	1. Business Card Model 2. ID document model 3. invoice model 4. language model 5. receipt model

Answers:

ID document model

invoice model

The invoice model extracts key information from sales invoices and is suitable for extracting information from sales account documents. The ID document model is optimized to analyze and extract key information from US driver's licenses and international passport biographical pages. The business card model, receipt model, and language model are not suitable to extract information from passports or sales account documents.

Analyze receipts with the Form Recognizer service - Training | Microsoft Learn

Document processing models - Form Recognizer - Azure Applied AI Services | Microsoft Learn

2. Which AI workload involves extracting valuable insights and knowledge from large volumes of unstructured data?	a) Computer vision b) Natural language processing c) Anomaly detection d) Knowledge mining
Answers: Knowledge mining Knowledge mining workloads focus on extracting valuable insights and knowledge from large volumes of unstructured data, facilitating efficient data analysis and decision-making.	
3. Which Azure service is used for extracting structured data from forms and documents?	a) Computer Vision service b) Custom Vision service c) Face service d) Form Recognizer service
Answers: Form Recognizer service The Form Recognizer service in Azure specializes in extracting structured data from forms and documents. It can identify and extract key-value pairs, tables, and other structured information from various types of forms.	
4. Azure AI Search is a	a) SaaS solution b) PaaS solution c) IaaS solution
Answers: PaaS solution It's a Platform as a Service (PaaS) solution. Microsoft manages the infrastructure and availability, allowing your organization to benefit without the need to purchase or manage dedicated hardware resources.	

5. The ability to extract text, layout, and key-value pairs are known as	a) Document analysis. b) Document intelligence
Answers: Document analysis. Document intelligence relies on machine learning models that are trained to recognize data in text. The ability to extract text, layout, and key-value pairs are known as document analysis. Document analysis provides locations of text on a page identified by bounding box coordinates.	
6. Text translation or Optical Character Recognition (OCR) is a	a) Built-in skills b) Custom skills
Answers:Built-in skills https://learn.microsoft.com/en-us/training/modules/intro-to-azure-search/2b-ai-skillsets	
7. A query that doesn't specify the field to search will execute against all the searchable fields within the index.	The given statement is True or False
Answers: True Azure AI Search queries can be submitted as an HTTP or REST API request, with the response coming back as JSON. Queries can specify what fields are searched and returned, how search results are shaped, and how the results should be filtered or sorted. A query that doesn't specify the field to search will execute against all the searchable fields within the index.	

Resources and References:

AI 900 Study Guide	Study guide link
Reference	AI900 Module 4 link
AI 900 latest questions resources	https://www.youtube.com/watch?v=oUi3RmK9yjI