Microsoft Power Platform Fundamentals (PL-900) Master Cheat Sheet

A collection of resources, study notes, and learning material to help prepare for and pass exam **PL-900: Microsoft Power Platform Fundamentals**. This exam focuses on the core capabilities of the Power Platform including: Power Apps, Power BI, and Power Automate (formerly known as Microsoft Flow).

Suggested Approach

1. **Skills Measured** - A copy from the official exam page with key phrases highlighted below. It is worth having a quick read to understand what will be tested on the exam. That said, always ensure to refer to the latest skills outline available directly from the official exam home page as the content does change from time to time.

2. **Learning Path** - Available as a free resource on Microsoft Learn: Microsoft Power Platform Fundamentals. Completion of the learning path aligned to this exam will provide a solid foundation to build upon.

3. **Study Notes** - Finally, refer to either your own set of notes or those compiled below after completing the learning path. Spend additional time in any areas where you may not feel a satisfactory level of confidence prior to taking the exam.

Resources

RESOURCE	LINK
Certification	Microsoft Certified: Power Platform Fundamentals
Exam	Exam PL-900: Microsoft Power Platform Fundamentals
Microsoft Learn	Microsoft Power Platform Fundamentals

Skills Measured

1. Understand the business value of Power Platform

Describe the value of Power Platform applications

- analyze data by using **Power BI**
- act with **Power Apps**
- build solutions that use **Common Data Service (CDS)**
- automate with **Power Automate**
- interoperate with **external systems and data**

Describe the value of connecting business solutions

- **Dynamics 365**, **Microsoft 365**, **Microsoft Azure**, **third-party services** and **apps**

Understand Power Platform administration and security

- understand how Power Platform implements **security**
- understand Power Platform as a **service**
- describe how to manage **apps and users**
- describe **admin centers**
- understand how the platform supports **compliance**

2. Understand the core components of Power Platform

Understand Common Data Services

- **user experience** vs unique **job role** using Power Apps
- identify **entities**, **fields**, and **relationships**
- describe **environments**
- describe use cases and limitations of **Business process flows**
- describe use cases and limitations of **business rules**
- describe the **Common Data Model (CDM)**
- identify common **standard entities**

Understand Connectors

- describe uses for and types of **triggers**
- describe **actions**
- describe **connectors**
- identify use cases for **custom connectors**

Understand AI Builder

- identify the business value of **AI Builder**
- describe **models**
- **consumption by the Power Platform**

3. Demonstrate the business value of Power BI

Understand common components in Power BI

- identify and describe uses for *visualization controls*
- describe types of *filters*
- describe *Tabs*
- *custom visuals*
- compare and contrast *dashboards* and *workspaces*
- compare and contrast *Power BI Desktop* and *Power BI Service*

Connect to and consume data

- *combine* multiple data sources
- *clean* and *transform* data
- describe and implement *aggregate functions*
- identify available types of *data sources*
- describe and consume *shared datasets* and *template apps*

Build a basic dashboard using Power BI

- design a *Power BI dashboard*
- design *data layout* and *mapping*
- *publish and share* reports and dashboards

4. Demonstrate the business value of Power Apps

Understand common components in Power Apps

- describe *canvas apps*
- describe *model-driven apps*
- identify and describe *controls*
- understand uses for *templates*
- understand use cases for *formulas*

Build a basic canvas app

- connect to *data*
- use *controls* to design the user experience
- describe the *customer journey*
- *publish and share* an app

Understand Power Apps portals

- describe use case for and the business value of *portals*
- describe how to *extend CDS data*, use *controls*, and *embed Power BI objects*

5. Demonstrate the business value of Power Automate

Understand the common components of Power Automate

- *flow types*
- *templates*
- *connectors*
- *triggers*
- *conditions*
- *expressions*
- *approvals*

Build a basic flow

- create a *business process flow*
- implement a *Power Automate template*
- *modify* a flow
- *run* a flow
- *export* a flow to Logic Apps

Study Notes

1. Understand the business value of Power Platform

Power Platform

Power Platform is comprised of four key products: Power Apps, Power Automate, and Power BI and Power Virtual Agents.

Power BI

Power BI (Business Intelligence) is a business analytics service that delivers insights for analyzing data. It can share those insights through data visualizations which make up reports and dashboards to enable fast, informed decisions.

Power Apps

Power Apps provides a rapid low code development environment for building custom apps for business needs. Power Apps enables the creation of web and mobile applications that run on all devices.

Power Automate

Power Automate lets users create automated workflows between applications and services. It helps automate repetitive business processes such as communication, data collections, and decision approvals.

Power Virtual Agents

Easily build chatbots to engage conversationally with your customers and employees—no coding required.

Common Data Service (CDS)

Common Data Service is a scalable data service and app platform which lets users securely store and manage data from multiple sources and integrate that data in business applications using a common data model to ensure ease and consistency to users.

Security

To manage security for Power Apps you can access https://admin.powerplatform.microsoft.com. Here you will find options for creating and managing environments, monitoring licenses, working with Data Loss Prevention policies and managing CDS Data Integration projects. This allows you to manage the Power Apps throughout your tenant from one single place.

Apps and Users

Microsoft 365 admin center is used to create user accounts. The user account registers the user with Microsoft Online Services environment. In addition to registration with the online service, the user account must be assigned a license in order for the user to have access to the service.

Admin Centers

There are multiple admin centers you use to manage and monitor your environments and settings. Click here to see the various admin centres and the basic role of each.

- Power Platform Admin Center (https://admin.powerplatform.microsoft.com): The new unified administrative portal for Power Platform admins. Includes: CDS environment management, Microsoft Power Automate support tickets, view Power Apps, and Power Automate admin analytics.

- <u>Power Apps Admin Center</u> (https://admin.powerapps.com): Creating and managing environments including security starts here.

- <u>Power BI admin portal</u> to manage a Power BI tenant.

- <u>Microsoft 365 admin center</u> (https://admin.microsoft.com/adminportal): Manage users and their license assignment.

Compliance

- <u>Trust Center</u>: Centralized resource for obtaining information on Microsoft's portfolio of products.

- <u>Data Location</u>: Environments can be created in a particular geo.

- <u>Power Automate Audit Log</u>: Events include Created flow, Edited flow, Deleted flow, Edited Permissions, Deleted Permissions, Started a paid trial, Renewed a paid trial.

2. Understand the core components of Power Platform

Common Data Service

A cloud-based solution that structures data and business logic to support interconnected applications and processes in a secure and compliant manner. Managed and maintained by Microsoft, CDS is available globally but deployed geographically to comply with your potential data residency.

Common Data Model

A logical design that includes a set of open-sourced, standardized, extensible data entities and relationships that Microsoft and its partners have published in an industry-wide initiative called the Open Data Initiative. This collection of predefined entities, attributes, semantic metadata, and relationships form the basis of the Common Data Model.

Entities

An entity is like a table in a database. A logical structure containing records that are made up of fields.

- <u>Standard</u>: The base set of entities that are created for every instance of a CDS. You can add more fields to any entity, but you can only delete fields from a custom entity.

- <u>Complex:</u> Entities that contain complex, server-side logic.

Fields

Fields are a way to store a discrete piece of information within a record in an entity. You might think of them as a column in Excel.

Relationships

Entities that relate to one another have a relational connection. Relationships between entities exist in many forms, but the two most common are one-to-many and many-to-many, both of which are supported by Common Data Service.

Environments

Used to store, manage, and share your organization's business data, apps, and flows. Each environment allows you to provision one Common Data Service database for use within that environment. Common Data Service environments allow you to manage user access, security settings, and the storage that is associated with that database.

Business Process Flows

You can help ensure that people enter data consistently and follow the same steps every time they work with a customer by creating a business process flow.

Business Rules

You can create business rules and recommendations to apply logic and validations without writing code or creating plug-ins. Define business rules for an entity that apply to all the entity forms and at the server level. Business rules defined for an entity apply to both canvas apps and model-driven apps if the entity is used in the app.

Triggers

Triggers are only used in Power Automate and prompt a flow to begin. Triggers can be time based, such as a flow which begins every day at 8:00 am, or they could be based off of an action like creating a new record in a table or receiving an email. You will always need a trigger to tell your workflow when to run.

Actions

Actions are used in Power Automate and Power Apps. Actions are prompted by the user or a trigger and allow interaction with your data source by some function. For example, an action would be sending an email in your workflow or app or writing a new line to a data source.

Connectors

Connectors enable you to connect apps, data, and devices in the cloud. Consider connectors the bridge across which information and commands travel. There are more than 275 connectors for the Power Platform, enabling all of your data and actions to connect cohesively.

Custom Connectors

While the Power Platform offers more than 200 connectors, you also have the option to build a custom connector. This will allow you to extend your app by calling a publicly available API, or a custom API you're hosting in a cloud provider, such as Azure.

AI Builder

AI Builder lets users and developers add AI capabilities to the workflows and Power Apps they create and use. AI Builder is a turnkey solution that allows you to easily add intelligence to your workflows and apps and predict outcomes to help improve business performance without writing code.

Models

Custom AI Models

- Prediction
- Form Processing
- Object Detection
- Text Classification

Pre-Built

- Business Card Reader
- Key Phrase Extraction
- Language Detection
- Text Recognition
- Sentiment Analysis

Consumption by Power Platform

You can use your published AI models, as well as some AI Builder prebuilt models in Power Automate and Power Apps. Example: Text Classification in Power Automate.

3. Demonstrate the business value of Power BI

Visualization Controls

Visuals allow you to present data in a compelling and insightful way and help you to highlight the important components. To create a new visualization drag field names from the Fields pane and then drop them on the report canvas, or in the Visualizations pane, select the type of visualization that you want to create.

Filters

Filters remove all but the data you want to focus on. There are four types of filters.

- Page Filter applies to all the visuals on the report page.

- Visual Filter applies to a single visual on a report page.

- Report Filter applies to all pages in the report.

- Drillthrough Filter applies to a single entity in a report.

Custom Visuals

Visualize data your way, with our rich library of fully-customizable, open-source data visualizations. With the custom visuals SDK, you can create stunning visualizations, based on well-known JavaScript libraries such as D3, jQuery, and even R-language scripts.

Dashboards

A Power BI dashboard is a single page, often called a canvas, that uses visualizations to tell a story. Because it is limited to one page, a well-designed dashboard contains only the most-important elements of that story.

Workspaces

Workspaces are places to collaborate with colleagues on specific content. Workspaces are created by Power BI designers to hold collections of dashboards, reports, and apps.

Power BI Desktop

Power BI Desktop is a free application you install on your local computer that lets you connect to, transform, and visualize your data. With Power BI Desktop, you can connect to multiple different sources of data, and combine them into a data model. Most users who work on business intelligence projects use Power BI Desktop to create reports, and then use the Power BI service to share their reports with others.

Power BI Service

The Microsoft Power BI service (app.powerbi.com), sometimes referred to as Power BI online, is the SaaS (Software as a Service) part of Power BI. See: Comparing Power BI Desktop and the Power BI Service.

Combine Data

With Power BI Desktop, you can connect to many different types of data sources, then shape the data to meet your needs, enabling you to create visual reports to share with others. Combining data means connecting to two or more data sources, shaping them as needed, then consolidating them into a useful query.

Clean & Transform

Shaping data means transforming the data: renaming columns or tables, changing text to numbers, removing rows, setting the first row as headers, and so on. Shape data by using Query Editor.

Aggregate Functions

Sometimes you want to mathematically combine values in your data. The mathematical operation could be sum, average, maximum, count, and so on. When you combine values in your data, it's called aggregating. The result of that mathematical operation is an aggregate.

Data Sources

With Power BI Desktop, you can connect to data from many different sources. For a full list of available data sources, see Power BI data sources. You connect to data by using the Home ribbon. To show the Most Common data types menu, select the Get Data button label or the down arrow.

Shared Datasets

As a creator of data models in Power BI Desktop, you're creating datasets that you can

distribute in the Power BI service. Then other report creators can use your datasets as a basis for their own reports.

Template Apps

As a Power BI partner, you create a set of out-of-the-box content for your customers and publish it yourself. You build template apps that allow your customers to connect and instantiate within their own accounts. As domain experts, they can unlock the data in a way that's easy for their business users to consume.

Layout

Move Tiles: On the dashboard, locate the new tile. Select and hold the tile to drag it to a new location on the dashboard canvas. Resize Tiles: You can make tiles many different sizes -- from 1x1 tile units up to 5x5. Select and drag the handle (in the bottom right corner) to resize the tile.

Publish and Share

Options for collaborating and sharing in Power BI:

- Collaborate in a workspace

- Distribute insights in an app

- Share a dataset

- Share dashboards and reports

- Annotate and share from the Power BI mobile apps

- Embed a report in Microsoft Teams

- Print or save as PDF or other static file

- Embed reports in secure portals or public web sites

- Create and deploy template apps

4. Demonstrate the business value of Power Apps

Canvas Apps

Canvas apps are a great option when you want to build an app from a blank canvas. Drag and drop various controls and add the desired functionality by writing Excel style formulas. Canvas apps provide you complete flexibility when building your apps.

Model-Driven Apps

Model-driven apps build from data in the Common Data Service. You define the relationships, forms, views, business rules, and more at the data layer, inside of the Common Data Service, giving you enough control to get your business result without writing all of the formulas yourself.

Templates

Create a canvas app automatically based on a template for a specific scenario, such as tracking budgets and scheduling vacations, and then run the app to understand its default behavior.

Formulas

Express logic in an app and control its navigation, filtering, sorting, and other functionality. Filter: Narrow down the records returned from your data source. Match: Check a value to see if it follows a given pattern. Distinct: Return the unique values from a list of data. Math functions: - From simple Sum or Average to the complex Atan and Sin.

Connect to Data

In Power Apps, add a data connection to an existing canvas app or to an app that you're building from scratch. Your app can connect to SharePoint, Common Data Service, Salesforce, OneDrive, or many other data sources.

Controls

Galleries: Layout containers that hold a set of controls that show records from a data source. Forms: Details about your data and let you create and edit records. Media: Background images, camera button, a barcode reader, and more. Charts: Perform instant analysis while they're on the road. See the Control Reference for a full list.

Publish and Share

File > Save As > The Cloud > Save > Share.

Permissions:

- Co-Owner (use, edit, share)
- User (view only)

Portals

Portals bring the power of no-code solutions to building externally facing websites. Through the Power Apps interface, you can build an anonymous or authenticated website that allows users to interact with data held in Common Data Service.

Portal Templates

- Customer self-service portal: A customer self-service portal enables customers to access self-service knowledge, support resources, view the progress of their cases, and provide feedback.

- Partner portal: A partner portal allows every organization with resellers, distributors, suppliers, or partners to have real-time access to every stage of shared activities.

- Employee self-service portal: An employee self-service portal creates an efficient and well-informed workforce by streamlining common tasks and empowering every employee with a definitive source of knowledge

- Community portal: A community portal leverages peer-to-peer interactions between customers and experts to organically grow the catalog of available knowledge from knowledge base articles, forums, and blogs as well as providing feedback through comments and ratings

- Portal from blank: Create a website to share data with external and internal users. This template comes with sample pages to get you quickly started.

Extend CDS Data

Power Apps offers standard "out-of-the-box" entities to cover typical scenarios within an organization (such as tracking appointments), but there may be times when you need to create custom entities to store data that's specific to your organization.

Embed Power BI Objects

A control that shows a Power BI tile inside an app. Take advantage of your existing data analysis and reporting by displaying your Power BI tiles inside your apps.

5. Demonstrate the business value of Power Automate | 20-25%

Flow Types

- Event Driven: Build with a trigger and then one or more actions.

- Business Process Flows: Built to augment the experience when using Model-driven apps and the Common Data Service.

- UI Flows: These robotic process automation (RPA) flows allow you to record yourself performing actions on your desktop or within a web browser.

Templates

Templates are great for getting started and support being customized. So you can take a template and extend it to meet your business needs.

Connectors

Connectors provide access to your data. There are currently over 200+ public connectors. Examples include: Office 365, Common Data Service, Twitter, Dropbox and more. Power Automate also allows you to create custom connectors, letting you talk to any data source via a swagger file.

Triggers

Power Automate flows are built with triggers and actions. Triggers determine what starts the flows, while actions determine what happens. There are three different types:

- When something changes

- On a schedule

- On a button press

Conditions

Specify that a flow performs one or more tasks only if a condition is true. For example, specify that you'll get an email only if a tweet that contains a keyword is retweeted at least 10 times.

Expressions

Used in Conditions to compare values. Expressions include:

- and

- or

- equals

- less

- greater

- empty

- not

- if

Approvals

To create an approval workflow, add the <u>Approvals - Start an approval</u> action to any flow. After you add this action, your flow can manage the approval of documents or processes. Approvers can respond to requests from their email inbox, the approvals center on the Power Automate website, or the Power Automate app.

Business Process Flow

Business process flows are used to guide a user through the steps of your business process when working with Model-driven apps and the Common Data Service. See link for a tutorial on how to create a Business Process Flow.

Power Automate Template

See link for a tutorial on how to implement a Power Automate Template.

Run a Flow

With Power Automate, you don't think of running a flow the same way as you do with Power Apps. Instead, you perform the activity that triggers the flow to run.

Export to Logic Apps

Now that you have built a flow you can also export the flow. When exporting a flow, you can either export to a package or a Logic Apps template. When you export to a Logic Apps template then you can go to Azure Logic Apps and import the template.

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