#### Section 1. Setting up a cloud solution environment

1.1 Setting up cloud projects and accounts. Activities include:

a. Creating a resource hierarchy

* <https://cloud.google.com/resource-manager>
* <https://cloud.google.com/resource-manager/docs/cloud-platform-resource-hierarchy>
* Creating and managing projects: <https://cloud.google.com/resource-manager/docs/creating-managing-projects>
* Creating projects: <https://cloud.google.com/sdk/gcloud/reference/projects/create>
* Cloud Identity: <https://cloud.google.com/identity/docs/overview>
* Creating and managing organizations: <https://cloud.google.com/resource-manager/docs/creating-managing-organization>
* Managing multiple organization resources: <https://cloud.google.com/resource-manager/docs/managing-multiple-orgs>
* Note on the exam, but frequently asked: Set up your Google Cloud Platform reseller account: <https://support.google.com/channelservices/answer/11559816?hl=en>

b. Applying organizational policies to the resource hierarchy

* <https://medium.com/google-cloud/org-policies-by-default-3adc0c8925b0>
* <https://cloud.google.com/resource-manager/docs/organization-policy/overview>
* Organization policy constraints - list : <https://cloud.google.com/resource-manager/docs/organization-policy/org-policy-constraints>
* Restricting resource usage: <https://cloud.google.com/resource-manager/docs/organization-policy/restricting-resources>
* Quickstarts: Need a personal account to do these. Can also just read through them
  + <https://cloud.google.com/resource-manager/docs/manage-google-cloud-resources>
  + <https://cloud.google.com/resource-manager/docs/organization-policy/enforce-organization-policy>

c. Granting members IAM roles within a project

* IAM Overview: <https://cloud.google.com/iam/docs/overview>
* Understanding roles: <https://cloud.google.com/iam/docs/understanding-roles>
* Understanding custom roles: <https://cloud.google.com/iam/docs/understanding-custom-roles>
* Choosing the correct predefined role: <https://cloud.google.com/iam/docs/choose-predefined-roles>
* Using IAM Securely: <https://cloud.google.com/iam/docs/using-iam-securely>
* Assigning users to pre-defined IAM roles within a project: <https://cloud.google.com/sdk/gcloud/reference/projects/add-iam-policy-binding>

d. Managing users and groups in Cloud Identity (manually and automated)

* Overview of Google identity management: <https://cloud.google.com/architecture/identity/overview-google-authentication>
* Automate user provisioning across cloud apps <https://cloud.google.com/identity/solutions/automate-user-provisioning>

e. Enabling APIs within projects

* API Explorer: <https://developers.google.com/apis-explorer>
* Getting started: <https://cloud.google.com/apis/docs/getting-started>
* Client Libraries - <https://cloud.google.com/apis/docs/client-libraries-explained>
* Cloud Client Libraries: <https://cloud.google.com/apis/docs/cloud-client-libraries>
* Enabling and Disabling Services: <https://cloud.google.com/service-management/enable-disable>
* Lists the services that are enabled or available to be enabled by a project: <https://cloud.google.com/sdk/gcloud/reference/services/list>
* Enabling services: <https://cloud.google.com/sdk/gcloud/reference/services/enable>
* Disabling services: <https://cloud.google.com/sdk/gcloud/reference/services/disable>

f. Provisioning and setting up products in Google Cloud’s operations suite

* Google Cloud operations suite documentation (Includes tutorials): <https://cloud.google.com/stackdriver/docs>
* Old website, but good summary (note - refers to Stackdriver, now rebranded as Cloud Operations): <https://cloud.google.com/blog/products/gcp/six-things-stackdriver-brings-to-the-devops-table>
* How To guides: <https://cloud.google.com/monitoring/docs/how-to>
* Setting up Error Reporting: <https://cloud.google.com/error-reporting/docs/setup>
* Installing Monitoring Agent: <https://cloud.google.com/monitoring/agent>
* Overview of uptime checks: <https://cloud.google.com/monitoring/uptime-checks/introduction>
* Using alerts: <https://cloud.google.com/monitoring/alerts>
* Using the Logs Explorer: <https://cloud.google.com/logging/docs/view/logs-explorer-interface>
* Cloud Profiler: <https://cloud.google.com/profiler/docs>
* Cloud Trace: <https://cloud.google.com/trace/docs/setup>
* Cloud Debugger: <https://cloud.google.com/debugger/docs/setup>

1.2 Managing billing configuration. Activities include:

a. Creating one or more billing accounts

* Overview:<https://cloud.google.com/billing/docs/concepts>
* Billing documentation: <https://cloud.google.com/billing/docs/>
* IAM roles for billing-related job functions: <https://cloud.google.com/iam/docs/job-functions/billing>
* All billing tasks: <https://cloud.google.com/billing/docs/how-to/account-management-overview>
* Create, modify, or close your self-serve Cloud Billing account: <https://cloud.google.com/billing/docs/how-to/manage-billing-account>

b. Linking projects to a billing account

* Create, modify, or close your self-serve Cloud Billing account: <https://cloud.google.com/billing/docs/how-to/manage-billing-account>
* Enable, disable, or change billing for a project: <https://cloud.google.com/billing/docs/how-to/modify-project>
* Payments profile: [https://cloud.google.com/billing/docs/concepts#:~:text=Payments%20Profiles%20are%20managed%20 outside,connected%20to%20Cloud%20Billing%20accounts](https://cloud.google.com/billing/docs/concepts#:~:text=Payments%20Profiles%20are%20managed%20outside,connected%20to%20Cloud%20Billing%20accounts).
* Linking projects - gcloud command: <https://cloud.google.com/sdk/gcloud/reference/beta/billing/projects/link>

c. Establishing billing budgets and alerts

* Create, edit, or delete budgets and budget alerts: [https://cloud.google.com/billing/docs/how-to/budgets](https://cloud.google.com/billing/docs/how-to/budgets#:~:text=A%20budget%20enables%20you%20to,is%20tracking%20against%20your%20budget)

d. Setting up billing exports

* To BigQuery: <https://cloud.google.com/billing/docs/how-to/export-data-bigquery>
* Example queries for Cloud Billing data export: <https://cloud.google.com/billing/docs/how-to/bq-examples>

Different topic, but related to billing: Labeling resources

* Creating and managing labels: <https://cloud.google.com/resource-manager/docs/creating-managing-labels>
* Audit logging: <https://cloud.google.com/resource-manager/docs/audit-logging>

1.3 Installing and configuring the command line interface (CLI), specifically the Cloud SDK (e.g., setting the default project).

* Google Cloud SDK: <https://cloud.google.com/sdk/>
* SDK Installation and quick start: <https://cloud.google.com/sdk/docs/install-sdk>
* Initializing the gcloud CLI: <https://cloud.google.com/sdk/docs/initializing>
* gcloud command to set configuration: <https://cloud.google.com/sdk/gcloud/reference/config/set>
* gcloud tool guide: <https://cloud.google.com/sdk/gcloud/>
  + Know how to set the project, zone & initialize the SDK
* Nice overview from a non-Google source (Linux only):: <https://github.com/akaliutau/gcp-grimoire/blob/master/notes/03_gcp_apis.md>