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```

7\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mswarm_models\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m OpenAIChat\n\u001b[0;32m----> 8\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mswarms\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m Agent, extract_code_from_markdown\n\u001b[1;32m 9\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01muuid\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m uuid4\n\u001b[1;32m 11\u001b[0m load_dotenv()\n",

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"File \u001b[0;32m/Library/Frameworks/Python.framework/Versions/3.12/lib/python3.12/site-packages/swarms/agents/tool_agent.py:3\u001b[0m\n\u001b[1;32m 1\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mtyping\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m Any, Optional, Callable\n\u001b[0;32m----> 3\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m

\u001b[38;5;21;01mswarms\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mstructs\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01magent\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m Agent\n\u001b[1;32m 4\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mswarms\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mtools\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mjson_former\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m Jsonformer\n\u001b[1;32m 5\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mswarms\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mutils\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mloguru_logger\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m logger\n",

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4\u001b[0m list_available_gpus,\n\u001b[1;32m 5\u001b[0m execute_on_gpu,\n\u001b[1;32m 6\u001b[0m execute_on_multiple_gpus,\n\u001b[1;32m 7\u001b[0m)\n\u001b[1;32m 9\u001b[0m __all__ \u001b[38;5;241m=\u001b[39m [\u001b[38;5;124m\"\u001b[39m\u001b[38;5;124mlist_available_cpus\u001b[39m\u001b[38;5;124m\"\u001b[39m, \u001b[38;5;124m\"\u001b[39m\u001b[38;5;124mexecute_with_cpu_cores\u001b[39m\u001b[38;5;124m\"\u001b[39m, \u001b[38;5;124m\"\u001b[39m\u001b[38;5;124mlist_available_gpus\u001b[39m\u001b[38;5;124m\"\u001b[39m, \u001b[38;5;124m\"\u001b[39m\u001b[38;5;124mexecute_on_gpu\u001b[39m\u001b[38;5;124m\"\u001b[39m, \u001b[38;5;124m\"\u001b[39m\u001b[38;5;124mexecute_on_multiple_gpus\u001b[39m\u001b[38;5;124m\"\u001b[39m]\n",
"File \u001b[0;32m/Library/Frameworks/Python.framework/Versions/3.12/lib/python3.12/site-packages/clusterops/main.py:6\u001b[0m\n\u001b[1;32m 4\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mloguru\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m logger\n\u001b[1;32m 5\u001b[0m \u001b[38;5;28;01mimport\u001b[39;00m \u001b[38;5;21;01mGPUtil\u001b[39;00m\n\u001b[0;32m----> 6\u001b[0m \u001b[38;5;28;01mimport\u001b[39;00m \u001b[38;5;21;01mray\u001b[39;00m\n\u001b[1;32m 9\u001b[0m \u001b[38;5;28;01mdef\u001b[39;00m \u001b[38;5;21mlist_available_cpus\u001b[39m()\n\u001b[38;5;241m-\u001b[39m\u001b[38;5;241m>\u001b[39m\n List[\u001b[38;5;28mint\u001b[39m]:\n\u001b[1;32m 10\u001b[0m \u001b[38;5;250m \u001b[39m\u001b[38;5;124;03m\"\"\"\u001b[39;00m\n\u001b[1;32m 11\u001b[0m

\u001b[38;5;124;03m Lists all available CPU cores.\u001b[39;00m\n\u001b[1;32m 12\u001b[0m \n\u001b[0;32m (...)\u001b[0m\n\u001b[1;32m 17\u001b[0m \u001b[38;5;124;03m RuntimeError: If no CPUs are found.\u001b[39;00m\n\u001b[1;32m 18\u001b[0m \u001b[38;5;124;03m \"\"\"\u001b[39;00m\n",

"File \u001b[0;32m/Library/Frameworks/Python.framework/Versions/3.12/lib/python3.12/site-packages/ray/__init__.py:113\u001b[0m\n\u001b[1;32m 105\u001b[0m _config \u001b[38;5;241m=\u001b[39m _Config()\n\u001b[1;32m 107\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mray\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01m_private\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mstate\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m (\u001b[38;5;66;03m# noqa: E402,F401\u001b[39;00m\n\u001b[1;32m 108\u001b[0m nodes,\n\u001b[1;32m 109\u001b[0m timeline,\n\u001b[1;32m 110\u001b[0m cluster_resources,\n\u001b[1;32m 111\u001b[0m available_resources,\n\u001b[1;32m 112\u001b[0m)\n\u001b[0;32m--> 113\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mray\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01m_private\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mworker\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m (\u001b[38;5;66;03m# noqa: E402,F401\u001b[39;00m\n\u001b[1;32m 114\u001b[0m LOCAL_MODE,\n\u001b[1;32m 115\u001b[0m SCRIPT_MODE,\n\u001b[1;32m 116\u001b[0m WORKER_MODE,\n\u001b[1;32m 117\u001b[0m RESTORE_WORKER_MODE,\n\u001b[1;32m 118\u001b[0m SPILL_WORKER_MODE,\n\u001b[1;32m 119\u001b[0m cancel,\n\u001b[1;32m 120\u001b[0m get,\n\u001b[1;32m 121\u001b[0m get_actor,\n\u001b[1;32m 122\u001b[0m get_gpu_ids,\n\u001b[1;32m 123\u001b[0m init,\n\u001b[1;32m 124\u001b[0m

is_initialized,\n\u001b[1;32m 125\u001b[0m put,\n\u001b[1;32m 126\u001b[0m kill,\n\u001b[1;32m 127\u001b[0m remote,\n\u001b[1;32m 128\u001b[0m shutdown,\n\u001b[1;32m 129\u001b[0m wait,\n\u001b[1;32m 130\u001b[0m)\n\u001b[1;32m 132\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mray\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01m_private\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mray_logging\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mlogging_config\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m LoggingConfig \u001b[38;5;66;03m# noqa: E402\u001b[39;00m\n\u001b[1;32m 134\u001b[0m \u001b[38;5;66;03m# We import ray.actor because some code is run in actor.py which initializes\u001b[39;00m\n\u001b[1;32m 135\u001b[0m \u001b[38;5;66;03m# some functions in the worker.\u001b[39;00m\n",

"File \u001b[0;32m/Library/Frameworks/Python.framework/Versions/3.12/lib/python3.12/site-packages/ray/_private/worker.py:1212\u001b[0m\n\u001b[1;32m 1207\u001b[0m \u001b[38;5;28;01mdef\u001b[39;00m \u001b[38;5;21mdisconnect\u001b[39m(\u001b[38;5;28mself\u001b[39m):\n\u001b[1;32m 1208\u001b[0m \u001b[38;5;66;03m# Include disconnect() to stay consistent with ClientContext\u001b[39;00m\n\u001b[1;32m 1209\u001b[0m ray\u001b[38;5;241m.\u001b[39mshutdown()\n\u001b[0;32m-> 1212\u001b[0m global_worker \u001b[38;5;241m=\u001b[39m \u001b[43mWorker\u001b[49m\u001b[43m()\u001b[49m\n\u001b[1;32m 1213\u001b[0m \u001b[38;5;124;03m\"\"\"Worker: The global Worker object for this worker process.\u001b[39;00m\n\u001b[1;32m 1214\u001b[0m \n\u001b[1;32m 1215\u001b[0m \u001b[38;5;124;03mWe use a global Worker object to ensure that there is a single worker object\u001b[39;00m\n\u001b[1;32m 1216\u001b[0m \u001b[38;5;124;03mper worker process.\u001b[39;00m\n\u001b[1;32m 1217\u001b[0m

\u001b[38;5;124;03m\"\"\"\u001b[39;00m\n\u001b[1;32m 1219\u001b[0m _global_node \u001b[38;5;241m=\u001b[39m \u001b[38;5;28;01mNone\u001b[39;00m\n",

"File \u001b[0;32m/Library/Frameworks/Python.framework/Versions/3.12/lib/python3.12/site-packages/ray/_private/worker.py:436\u001b[0m, in \u001b[0;36mWorker.__init__\u001b[0;34m(self)\u001b[0m\n\u001b[1;32m 431\u001b[0m \u001b[38;5;28mself\u001b[39m\u001b[38;5;241m.\u001b[39mactors \u001b[38;5;241m=\u001b[39m {}\n\u001b[1;32m 432\u001b[0m \u001b[38;5;66;03m# When the worker is constructed. Record the original value of the\u001b[39;00m\n\u001b[1;32m 433\u001b[0m \u001b[38;5;66;03m# (CUDA_VISIBLE_DEVICES, ONEAPI_DEVICE_SELECTOR, ROCR_VISIBLE_DEVICES,\u001b[39;00m\n\u001b[1;32m 434\u001b[0m \u001b[38;5;66;03m# NEURON_RT_VISIBLE_CORES, TPU_VISIBLE_CHIPS, ..) environment variables.\u001b[39;00m\n\u001b[1;32m 435\u001b[0m \u001b[38;5;28mself\u001b[39m\u001b[38;5;241m.\u001b[39moriginal_visible_accelerator_ids \u001b[38;5;241m=\u001b[39m (\n\u001b[0;32m--> 436\u001b[0m \u001b[43mray\u001b[49m\u001b[38;5;241;43m.\u001b[39;49m\u001b[43m_private\u001b[49m\u001b[38;5;241m.\u001b[39mutils\u001b[38;5;241m.\u001b[39mget_visible_accelerator_ids()\n\u001b[1;32m 437\u001b[0m)\n\u001b[1;32m 438\u001b[0m \u001b[38;5;66;03m# A dictionary that maps from driver id to SerializationContext\u001b[39;00m\n\u001b[1;32m 439\u001b[0m \u001b[38;5;66;03m# TODO: clean up the SerializationContext once the job finished.\u001b[39;00m\n\u001b[1;32m 440\u001b[0m \u001b[38;5;28mself\u001b[39m\u001b[38;5;241m.\u001b[39mserialization_context_map \u001b[38;5;241m=\u001b[39m {}\n",

"\u001b[0;31mAttributeError\u001b[0m: partially initialized module 'ray' has no attribute '_private' (most likely due to a circular import)"

]

```
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   "import os\n",
   "\n",
   "import mermaid as md\n",
   "from dotenv import load_dotenv\n",
   "from loguru import logger\n",
   "from mermaid.graph import Graph\n",
   "from swarm_models import OpenAIChat\n",
   "from swarms import Agent, extract_code_from_markdown\n",
   "from uuid import uuid4\n",
   "\n",
   "load_dotenv()\n",
   "\n",
   "# Example with Groq\n",
   "groq_api_key = os.getenv(\"GROQ_API_KEY\")\n",
   "model = OpenAIChat(\n",
   "    openai_api_base=\"https://api.groq.com/openai/v1\",\n",
   "    openai_api_key=groq_api_key,\n",
   "    model_name=\"llama-3.1-70b-versatile\",\n",
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   ")\n"
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    "graph LR\n",
    "    Start[Analyze Business Strategy]\n",
    "    A[Break Down Strategy] --> B[Identify Objectives]\n",
    "    B --> C[Identify Resources]\n",
    "    C --> D[Analyze Market Conditions]\n",
    "    D --> E[Analyze Competitors]\n",
    "    E --> F[Identify Operational Steps]\n",
    "    F --> G[Identify Potential Outcomes]\n",
    "    G --> H[Identify Decision Points]\n",
    "    H --> I[Identify Failure Points]\n",
    "    I --> J[Emphasize Failure Points]\n",
    "    J --> K[Construct Mermaid Graph]\n",
    "    K --> L[Render Mermaid Graph]\n",
    "    L --> M[Iterate and Refine]\n",
    "    M --> N[Get User Feedback]\n",
```

"   N --> O[Update Mermaid Graph]\n",

"   O --> P[Repeat Iteration]\n",

"   P -.->|Until Satisfied| Start\n",

"   I --> Q{Failure Scenarios}\n",

"   Q -->|Logistics Failure| R[High Costs]\n",

"   Q -->|Regulatory Failure| S[Compliance Challenges]\n",

"   S -->|Failure| T[Potential Penalties]\n",

"   T -.->|Reassessment| Start\n",

"   G --> U{Success Probability}\n",

"   U -->|High| V[Implement Marketing Strategy]\n",

"   U -->|Low| Q\n",

"   V --> W[Monitor Progress]\n",

"   W --> X[Evaluate Success]\n",

"   X --> Y[Adjust Strategy]\n",

"   Y -.->|Until Successful| Start\n",

"```\n",

"\u001b[36m\n",

"Loop 1 of 1\u001b[0m\n",

"\n",

"\n",

"\n",

"\n",

"```mermaid\n",

"graph LR\n",

"   Start[Growing Spreadsheet Swarm Product] \n",

"   A[Identify Target Industries] --> B[Assess Market Demand]\n",

```
"    B --> C{Main Potential Issues}\n",
"    C -->|Scalability| D[High Infrastructure Costs]\n",
"    C -->|Integration| E[Compatibility Challenges]\n",
"    E -->|Failure| F[Potential Data Loss]\n",
"    F -.->|Reassessment| Start\n",
"    B --> G{Success Probability}\n",
"    G -->|High| H[Develop Strategic Partnerships]\n",
"    G -->|Low| C\n",
"    H --> I[Expand Marketing Efforts]\n",
"    I --> J{Marketing Channels}\n",
"    J -->|Content Marketing| K[Blog Posts and Articles]\n",
"    J -->|Social Media Marketing| L[Twitter and LinkedIn]\n",
"    J -->|Paid Advertising| M[Google Ads and Sponsored Content]\n",
"    K --> N[Establish Thought Leadership]\n",
"    L --> O[Build Community Engagement]\n",
"    M --> P[Drive Website Traffic]\n",
"    N --> Q{Partnership Opportunities}\n",
"    O --> Q\n",
"    P --> Q\n",
"    Q -->|Success| R[Close Deals and Acquire Customers]\n",
"    Q -->|Failure| S[Reevaluate Marketing Strategy]\n",
"    S -.->|Reassessment| I\n",
"    R --> T[Deliver High-Quality Support]\n",
"    T --> U{Support Channels}\n",
"    U -->|Email Support| V[Timely Responses]\n",
"    U -->|Phone Support| W[Personalized Assistance]\n",
```

```
"    V --> X[Improve Customer Satisfaction]\n",
"    W --> X\n",
"    X --> Y[Encourage Customer Loyalty]\n",
"    Y --> Z{Growth Loop}\n",
"    Z -->|Positive Word-of-Mouth| A\n",
"    Z -->|Customer Referrals| A\n",
"```\n"
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```

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7.377,161.328L1975.625,161.328\" id=\"L_F_Start_5\" class=\" edge-thickness-normal edge-pattern-dotted edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M431.982,382.18L450.534,403.013C469.087,423.846,506.192,465.513,526.869,486.388C547.547,507.263,551.797,507.346,555.38,507.417C558.964,507.487,561.881,507.544,563.339,507.573L564.798,507.601\" id=\"L_B_G_6\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M745.637,520.918L754.578,522.295C763.519,523.672,781.4,526.426,793.749,527.803C806.099,529.18,812.917,529.18,819.068,529.18C825.219,529.18,830.703,529.18,833.445,529.18L836.188,529.18\" id=\"L_G_H_7\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M694.823,443.628L712.233,407.387C729.643,371.145,764.462,298.663,791.14,256.154C817.819,213.646,836.356,201.111,854.342,188.951C872.327,176.79,889.76,165.003,898.476,159.109L907.193,153.216\" id=\"L_G_C_8\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M1100.188,529.18L1110.951,529.18C1121.714,529.18,1143.24,529.18,1159.384,529.18C1175.529,529.18,1186.292,529.18,1196.388,529.18C1206.484,529.18,1215.914,529.18,1220.629,529.18L1225.344,529.18\" id=\"L_H_I_9\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M1394.562,502.18L1415.289,489.846C1436.015,477.513,1477.469,452.846,1502.538,440.555C1527.608,428.263,1536.294,428.346,1544.314,428.423C1552.333,428.5,1559.686,428.571,1563.363,428.606L1567.039,428.641\" id=\"L_I_J_10\" class=\" edge-thickness-normal edge-pattern-solid

edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M1723.498,387.732L1748.356,369.332C1773.215,350.931,1822.932,314.13,1858.351,295.729C1893.77,277.328,1914.891,277.328,1935.345,277.328C1955.799,277.328,1975.587,277.328,1985.481,277.328L1995.375,277.328\" id=\"L_J_K_11\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M1754.764,418.998L1774.411,416.72C1794.059,414.442,1833.354,409.885,1864.116,407.607C1894.878,405.328,1917.107,405.328,1938.669,405.328C1960.232,405.328,1981.128,405.328,1991.576,405.328L2002.023,405.328\" id=\"L_J_L_12\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M1734.274,458.851L1757.337,469.264C1780.399,479.677,1826.524,500.502,1858.501,510.915C1890.478,521.328,1908.307,521.328,1925.47,521.328C1942.633,521.328,1959.129,521.328,1967.377,521.328L1975.625,521.328\" id=\"L_J_M_13\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M2219.875,277.328L2235.461,277.328C2251.047,277.328,2282.219,277.328,2303.952,277.328C2325.685,277.328,2337.979,277.328,2349.607,277.328C2361.234,277.328,2372.195,277.328,2377.676,277.328L2383.156,277.328\" id=\"L_K_N_14\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M2213.227,405.328L2229.921,405.328C2246.615,405.328,2280.003,405.328,2302.844,405.328C2325.685,405.328,2337.979,405.328,2349.607,405.328C2361.234,405.328,2372.195,405.328,2377.676,405.328L2383.156,405.328\" id=\"L_L_O_15\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\"

marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M2239.625,521.328L2251.919,521.328C2264.214,521.328,2288.802,521.328,2309.342,521.328C2329.883,521.328,2346.375,521.328,2362.201,521.328C2378.026,521.328,2393.185,521.328,2400.764,521.328L2408.344,521.328\" id=\"L_M_P_16\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M2647.156,277.328L2665.216,277.328C2683.276,277.328,2719.396,277.328,2749.779,283.351C2780.161,289.373,2804.807,301.418,2828.854,313.17C2852.901,324.922,2876.349,336.382,2888.073,342.111L2899.797,347.841\" id=\"L_N_Q_17\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M2647.156,405.328L2665.216,405.328C2683.276,405.328,2719.396,405.328,2747.226,404.634C2775.056,403.939,2794.596,402.55,2813.471,401.208C2832.346,399.867,2850.556,398.572,2859.661,397.925L2868.766,397.278\" id=\"L_O_Q_18\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M2621.969,521.328L2644.227,521.328C2666.484,521.328,2711,521.328,2745.996,513.935C2780.992,506.542,2806.468,491.756,2831.368,477.304C2856.267,462.853,2880.59,448.736,2892.752,441.677L2904.913,434.619\" id=\"L_P_Q_19\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M3089.069,375.042L3099.912,373.554C3110.754,372.066,3132.44,369.089,3147.614,367.601C3162.789,366.113,3171.453,366.113,3179.451,366.113C3187.448,366.113,3194.779,366.113,3198.444,366.113L3202.109,366.113\" id=\"L_Q_R_20\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path

d=\"M3049.456,441.798L3066.901,455.851C3084.346,469.903,3119.235,498.008,3144.171,515.23
3C3169.107,532.458,3184.088,538.802,3198.456,544.887C3212.824,550.971,3226.578,556.795,3
233.455,559.708L3240.332,562.62\" id=\"L_Q_S_21\" class=\" edge-thickness-normal
edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\"
marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path
d=\"M3206.109,618.181L3197.445,619.181C3188.781,620.181,3171.453,622.18,3134.27,623.18C3
097.086,624.18,3040.047,624.18,2973.612,624.18C2907.177,624.18,2831.346,624.18,2753.704,62
4.18C2676.063,624.18,2596.609,624.18,2522.922,624.18C2449.234,624.18,2381.313,624.18,2313
.391,624.18C2245.469,624.18,2177.547,624.18,2104.09,624.18C2030.633,624.18,1951.641,624.1
8,1877.91,624.18C1804.18,624.18,1735.711,624.18,1676.757,624.18C1617.802,624.18,1568.362,
624.18,1533.517,618.513C1498.673,612.846,1478.424,601.513,1458.757,590.505C1439.089,579.
498,1420.004,568.815,1410.461,563.474L1400.918,558.133\" id=\"L_S_I_22\" class=\"
edge-thickness-normal edge-pattern-dotted edge-thickness-normal edge-pattern-solid
flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path
d=\"M3466.109,366.113L3470.276,366.113C3474.443,366.113,3482.776,366.113,3489.026,366.11
3C3495.276,366.113,3499.443,366.113,3502.943,366.113C3506.443,366.113,3509.276,366.113,3
510.693,366.113L3512.109,366.113\" id=\"L_R_T_23\" class=\" edge-thickness-normal
edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\"
marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path
d=\"M3776.109,366.113L3780.276,366.113C3784.443,366.113,3792.776,366.113,3799.068,366.15
5C3805.359,366.197,3809.609,366.28,3813.193,366.35C3816.776,366.42,3819.693,366.478,3821.
152,366.506L3822.61,366.535\" id=\"L_T_U_24\" class=\" edge-thickness-normal edge-pattern-solid
edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\"
marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path
d=\"M3983.675,345.32L3999.908,340.119C4016.14,334.918,4048.605,324.515,4073.01,319.314C4
097.415,314.113,4113.76,314.113,4129.439,314.113C4145.117,314.113,4160.129,314.113,4167.6

35,314.113L4175.141,314.113\" id=\"L_U_V_25\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M3963.514,408.068L3983.107,425.075C4002.7,442.083,4041.885,476.098,4067.861,493.106C4093.837,510.113,4106.604,510.113,4118.704,510.113C4130.805,510.113,4142.238,510.113,4147.955,510.113L4153.672,510.113\" id=\"L_U_W_26\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M4363.563,314.113L4371.307,314.113C4379.052,314.113,4394.542,314.113,4405.516,315.197C4416.49,316.28,4422.948,318.447,4428.774,320.401C4434.6,322.356,4439.795,324.098,4442.392,324.97L4444.989,325.841\" id=\"L_V_X_27\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M4385.031,510.113L4389.198,510.113C4393.365,510.113,4401.698,510.113,4415.283,501.363C4428.868,492.613,4447.705,475.113,4466.053,458.067C4484.402,441.021,4502.262,424.428,4511.192,416.132L4520.122,407.836\" id=\"L_W_X_28\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M4695.031,366.113L4699.198,366.113C4703.365,366.113,4711.698,366.113,4717.948,366.113C4724.198,366.113,4728.365,366.113,4731.865,366.113C4735.365,366.113,4738.198,366.113,4739.615,366.113L4741.031,366.113\" id=\"L_X_Y_29\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M5005.031,366.113L5009.198,366.113C5013.365,366.113,5021.698,366.113,5032.764,391.471C5043.83,416.829,5057.629,467.544,5071.253,517.617C5084.876,567.689,5098.325,617.118,5105.05,641.832L5111.774,666.547\" id=\"L_Y_Z_30\" class=\" edge-thickness-normal

edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M5068.901,714.329L5062.423,712.808C5055.944,711.286,5042.988,708.243,5010.676,706.721C4978.365,705.199,4926.698,705.199,4875.031,705.199C4823.365,705.199,4771.698,705.199,4720.031,705.199C4668.365,705.199,4616.698,705.199,4565.031,705.199C4513.365,705.199,4461.698,705.199,4412.751,705.199C4363.805,705.199,4317.578,705.199,4262.751,705.199C4207.924,705.199,4144.497,705.199,4085.154,705.199C4025.81,705.199,3970.549,705.199,3923.889,705.199C3877.229,705.199,3839.169,705.199,3794.306,705.199C3749.443,705.199,3697.776,705.199,3646.109,705.199C3594.443,705.199,3542.776,705.199,3491.109,705.199C3439.443,705.199,3387.776,705.199,3331.612,705.199C3275.448,705.199,3214.786,705.199,3155.936,705.199C3097.086,705.199,3040.047,705.199,2973.612,705.199C2907.177,705.199,2831.346,705.199,2753.704,705.199C2676.063,705.199,2596.609,705.199,2522.922,705.199C2449.234,705.199,2381.313,705.199,2313.391,705.199C2245.469,705.199,2177.547,705.199,2104.09,705.199C2030.633,705.199,1951.641,705.199,1877.91,705.199C1804.18,705.199,1735.711,705.199,1676.757,705.199C1617.802,705.199,1568.362,705.199,1515.353,705.199C1462.344,705.199,1405.766,705.199,1346.74,705.199C1287.714,705.199,1226.24,705.199,1163.073,705.199C1099.906,705.199,1035.047,705.199,974.133,705.199C913.219,705.199,856.25,705.199,805.108,705.199C753.966,705.199,708.651,705.199,665.987,705.199C623.323,705.199,583.31,705.199,540.743,705.199C498.177,705.199,453.057,705.199,407.938,705.199C362.818,705.199,317.698,705.199,293.055,705.199C268.411,705.199,264.245,705.199,260.745,705.199C257.245,705.199,254.411,705.199,252.995,705.199L251.578,705.199\" id=\"L_Z_A_31\" class=\" edge-thickness-normal edge-pattern-solid edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\" marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/><path d=\"M5068.901,741.069L5062.423,742.424C5055.944,743.779,5042.988,746.489,5010.676,747.844C4978.365,749.199,4926.698,749.199,4875.031,749.199C4823.365,749.199,4771.698,749.199,4720.031,749.199C4668.365,749.199,4616.698,749.199,4565.031,749.199C4513.365,749.199,4461

.698,749.199,4412.751,749.199C4363.805,749.199,4317.578,749.199,4262.751,749.199C4207.92
4,749.199,4144.497,749.199,4085.154,749.199C4025.81,749.199,3970.549,749.199,3923.889,749.
199C3877.229,749.199,3839.169,749.199,3794.306,749.199C3749.443,749.199,3697.776,749.199
,3646.109,749.199C3594.443,749.199,3542.776,749.199,3491.109,749.199C3439.443,749.199,33
87.776,749.199,3331.612,749.199C3275.448,749.199,3214.786,749.199,3155.936,749.199C3097.
086,749.199,3040.047,749.199,2973.612,749.199C2907.177,749.199,2831.346,749.199,2753.704,
749.199C2676.063,749.199,2596.609,749.199,2522.922,749.199C2449.234,749.199,2381.313,749
.199,2313.391,749.199C2245.469,749.199,2177.547,749.199,2104.09,749.199C2030.633,749.199,
1951.641,749.199,1877.91,749.199C1804.18,749.199,1735.711,749.199,1676.757,749.199C1617.
802,749.199,1568.362,749.199,1515.353,749.199C1462.344,749.199,1405.766,749.199,1346.74,7
49.199C1287.714,749.199,1226.24,749.199,1163.073,749.199C1099.906,749.199,1035.047,749.1
99,974.133,749.199C913.219,749.199,856.25,749.199,805.108,749.199C753.966,749.199,708.651
,749.199,665.987,749.199C623.323,749.199,583.31,749.199,540.743,749.199C498.177,749.199,4
53.057,749.199,407.938,749.199C362.818,749.199,317.698,749.199,290.476,747.783C263.255,74
6.366,253.931,743.533,245.245,740.893C236.56,738.254,228.512,735.808,224.488,734.585L220.4
64,733.362\" id=\"L_Z_A_32\" class=\" edge-thickness-normal edge-pattern-solid
edge-thickness-normal edge-pattern-solid flowchart-link\" style=\"\"
marker-end=\"url(#mermaid-svg_flowchart-v2-pointEnd)\"/></g><g class=\"edgeLabels\"><g
class=\"edgeLabel\"><g class=\"label\" transform=\"translate(0, 0)\"><foreignObject width=\"0\"
height=\"0\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display:
table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span
class=\"edgeLabel \"> </foreignObject></g></g><g class=\"edgeLabel\"><g
class=\"label\" transform=\"translate(0, 0)\"><foreignObject width=\"0\" height=\"0\"><div
xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space:
nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"edgeLabel
\"> </foreignObject></g></g><g class=\"edgeLabel\"

transform=\"translate(1164.765625, 57.328125)\"><g class=\"label\" transform=\"translate(-37.0703125, -12)\"><foreignObject width=\"74.140625\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"edgeLabel \"> Scalability </foreignObject></g></g><g class=\"edgeLabel\" transform=\"translate(1164.765625, 161.328125)\"><g class=\"label\" transform=\"translate(-39.578125, -12)\"><foreignObject width=\"79.15625\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"edgeLabel \"> Integration </foreignObject></g></g><g class=\"edgeLabel\" transform=\"translate(1518.921875, 161.328125)\"><g class=\"label\" transform=\"translate(-24.890625, -12)\"><foreignObject width=\"49.78125\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"edgeLabel \"> Failure </foreignObject></g></g><g class=\"edgeLabel\" transform=\"translate(1872.6484375, 161.328125)\"><g class=\"label\" transform=\"translate(-48.765625, -12)\"><foreignObject width=\"97.53125\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"edgeLabel \"> Reassessment </foreignObject></g></g><g class=\"edgeLabel\"><g class=\"label\" transform=\"translate(0, 0)\"><foreignObject width=\"0\" height=\"0\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"edgeLabel \"> </foreignObject></g></g><g class=\"edgeLabel\" transform=\"translate(799.28125, 529.1796875)\"><g class=\"label\" transform=\"translate(-15.90625, -12)\"><foreignObject width=\"31.8125\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\"

style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"edgeLabel \"> High </foreignObject></g></g><g class=\"edgeLabel\" transform=\"translate(799.28125, 226.1796875)\"><g class=\"label\" transform=\"translate(-14.296875, -12)\"><foreignObject width=\"28.59375\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"> Low </foreignObject></g></g><g class=\"edgeLabel\"><g class=\"label\" transform=\"translate(0, 0)\"><foreignObject width=\"0\" height=\"0\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"> </foreignObject></g></g><g class=\"edgeLabel\"><g class=\"label\" transform=\"translate(0, 0)\"><foreignObject width=\"0\" height=\"0\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"> </foreignObject></g></g><g class=\"edgeLabel\" transform=\"translate(1872.6484375, 277.328125)\"><g class=\"label\" transform=\"translate(-66.1640625, -12)\"><foreignObject width=\"132.328125\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"> Content Marketing </foreignObject></g></g><g class=\"edgeLabel\" transform=\"translate(1872.6484375, 405.328125)\"><g class=\"label\" transform=\"translate(-81.9765625, -12)\"><foreignObject width=\"163.953125\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"> Social Media Marketing </foreignObject></g></g><g class=\"edgeLabel\" transform=\"translate(1872.6484375, 521.328125)\"><g class=\"label\"

transform=\"translate(-56.921875, -12)\"><foreignObject width=\"113.84375\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><p>Paid Advertising</p></div></foreignObject></g></g><g class=\"edgeLabel\"><g class=\"label\" transform=\"translate(0, 0)\"><foreignObject width=\"0\" height=\"0\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"></div></foreignObject></g></g><g class=\"edgeLabel\"><g class=\"label\" transform=\"translate(0, 0)\"><foreignObject width=\"0\" height=\"0\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"></div></foreignObject></g></g><g class=\"edgeLabel\"><g class=\"label\" transform=\"translate(0, 0)\"><foreignObject width=\"0\" height=\"0\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"></div></foreignObject></g></g><g class=\"edgeLabel\"><g class=\"label\" transform=\"translate(0, 0)\"><foreignObject width=\"0\" height=\"0\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"></div></foreignObject></g></g><g class=\"edgeLabel\"><g class=\"label\" transform=\"translate(0, 0)\"><foreignObject width=\"0\" height=\"0\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"></div></foreignObject></g></g><g class=\"edgeLabel\"><g class=\"label\" transform=\"translate(0, 0)\"><foreignObject width=\"0\" height=\"0\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space:

nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"edgeLabel \"> </foreignObject></g></g><g class=\"edgeLabel\" transform=\"translate(3154.125, 366.11328125)\"><g class=\"label\" transform=\"translate(-26.984375, -12)\"><foreignObject width=\"53.96875\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"> Success </foreignObject></g></g><g class=\"edgeLabel\" transform=\"translate(3154.125, 526.11328125)\"><g class=\"label\" transform=\"translate(-24.890625, -12)\"><foreignObject width=\"49.78125\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"> Failure </foreignObject></g></g><g class=\"edgeLabel\" transform=\"translate(2313.390625, 624.1796875)\"><g class=\"label\" transform=\"translate(-48.765625, -12)\"><foreignObject width=\"97.53125\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"> Reassessment </foreignObject></g></g><g class=\"edgeLabel\"><g class=\"label\" transform=\"translate(0, 0)\"><foreignObject width=\"0\" height=\"0\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"> </foreignObject></g></g><g class=\"edgeLabel\"><g class=\"label\" transform=\"translate(0, 0)\"><foreignObject width=\"0\" height=\"0\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"> </foreignObject></g></g><g class=\"edgeLabel\" transform=\"translate(4081.0703125, 314.11328125)\"><g class=\"label\" transform=\"translate(-49.890625, -12)\"><foreignObject width=\"99.78125\" height=\"24\"><div

xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space:
nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"edgeLabel
\"><p>Email Support</p></div></foreignObject></g></g><g class=\"edgeLabel\"
transform=\"translate(4081.0703125, 510.11328125)\"><g class=\"label\"
transform=\"translate(-51.6015625, -12)\"><foreignObject width=\"103.203125\" height=\"24\"><div
xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space:
nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"edgeLabel
\"><p>Phone Support</p></div></foreignObject></g></g><g class=\"edgeLabel\"><g
class=\"label\" transform=\"translate(0, 0)\"><foreignObject width=\"0\" height=\"0\"><div
xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space:
nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"edgeLabel
\"></div></foreignObject></g></g><g class=\"edgeLabel\"><g class=\"label\"
transform=\"translate(0, 0)\"><foreignObject width=\"0\" height=\"0\"><div
xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space:
nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"edgeLabel
\"></div></foreignObject></g></g><g class=\"edgeLabel\"><g class=\"label\"
transform=\"translate(0, 0)\"><foreignObject width=\"0\" height=\"0\"><div
xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space:
nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"edgeLabel
\"></div></foreignObject></g></g><g class=\"edgeLabel\"><g class=\"label\"
transform=\"translate(0, 0)\"><foreignObject width=\"0\" height=\"0\"><div
xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space:
nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"edgeLabel
\"></div></foreignObject></g></g><g class=\"edgeLabel\"
transform=\"translate(2755.515625, 705.19921875)\"><g class=\"label\"
transform=\"translate(-83.359375, -12)\"><foreignObject width=\"166.71875\" height=\"24\"><div

xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"edgeLabel \"> Positive Word-of-Mouth </foreignObject></g></g><g class=\"edgeLabel\" transform=\"translate(2755.515625, 749.19921875)\"><g class=\"label\" transform=\"translate(-68.421875, -12)\"><foreignObject width=\"136.84375\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" class=\"labelBkg\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"edgeLabel \"> Customer Referrals </foreignObject></g></g></g><g class=\"nodes\"><g class=\"node default \" id=\"flowchart-Start-0\" transform=\"translate(2109.625, 161.328125)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-130\" y=\"-39\" width=\"260\" height=\"78\"/><g class=\"label\" style=\"\" transform=\"translate(-100, -24)\"><rect/><foreignObject width=\"200\" height=\"48\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table; white-space: break-spaces; line-height: 1.5; max-width: 200px; text-align: center; width: 200px;\"><span class=\"nodeLabel \"> Growing Spreadsheet Swarm Product </foreignObject></g></g><g class=\"node default \" id=\"flowchart-A-1\" transform=\"translate(127.7890625, 705.19921875)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-119.7890625\" y=\"-27\" width=\"239.578125\" height=\"54\"/><g class=\"label\" style=\"\" transform=\"translate(-89.7890625, -12)\"><rect/><foreignObject width=\"179.578125\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"nodeLabel \"> Identify Target Industries </foreignObject></g></g><g class=\"node default \" id=\"flowchart-B-2\" transform=\"translate(407.9375, 355.1796875)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-110.359375\" y=\"-27\" width=\"220.71875\" height=\"54\"/><g class=\"label\" style=\"\" transform=\"translate(-80.359375, -12)\"><rect/><foreignObject width=\"160.71875\" height=\"24\"><div

xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"nodeLabel \"> Assess Market Demand </foreignObject></g></g><g class=\"node default \" id=\"flowchart-C-4\" transform=\"translate(970.1875, 109.328125)\"><polygon points=\"101.328125,0 202.65625,-101.328125 101.328125,-202.65625 0,-101.328125\" class=\"label-container\" transform=\"translate(-101.328125,101.328125)\"/><g class=\"label\" style=\"\" transform=\"translate(-74.328125, -12)\"><rect/><foreignObject width=\"148.65625\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"nodeLabel \"> Main Potential Issues </foreignObject></g></g><g class=\"node default \" id=\"flowchart-D-6\" transform=\"translate(1349.1875, 57.328125)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-119.1875\" y=\"-27\" width=\"238.375\" height=\"54\"/><g class=\"label\" style=\"\" transform=\"translate(-89.1875, -12)\"><rect/><foreignObject width=\"178.375\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"nodeLabel \"> High Infrastructure Costs </foreignObject></g></g><g class=\"node default \" id=\"flowchart-E-8\" transform=\"translate(1349.1875, 161.328125)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-119.171875\" y=\"-27\" width=\"238.34375\" height=\"54\"/><g class=\"label\" style=\"\" transform=\"translate(-89.171875, -12)\"><rect/><foreignObject width=\"178.34375\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"nodeLabel \"> Compatibility Challenges </foreignObject></g></g><g class=\"node default \" id=\"flowchart-F-10\" transform=\"translate(1667.2421875, 161.328125)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-98.4296875\" y=\"-27\" width=\"196.859375\" height=\"54\"/><g class=\"label\" style=\"\"

transform=\"translate(-68.4296875, -12)\"><rect/><foreignObject width=\"136.859375\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"nodeLabel \"> Potential Data Loss </foreignObject></g></g><g class=\"node default \" id=\"flowchart-G-14\" transform=\"translate(663.3359375, 507.1796875)\"><polygon points=\"95.0390625,0 190.078125,-95.0390625 95.0390625,-190.078125 0,-95.0390625\" class=\"label-container\" transform=\"translate(-95.0390625,95.0390625)\"/><g class=\"label\" style=\"\" transform=\"translate(-68.0390625, -12)\"><rect/><foreignObject width=\"136.078125\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"nodeLabel \"> Success Probability </foreignObject></g></g><g class=\"node default \" id=\"flowchart-H-16\" transform=\"translate(970.1875, 529.1796875)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-130\" y=\"-39\" width=\"260\" height=\"78\"/><g class=\"label\" style=\"\" transform=\"translate(-100, -24)\"><rect/><foreignObject width=\"200\" height=\"48\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table; white-space: break-spaces; line-height: 1.5; max-width: 200px; text-align: center; width: 200px;\"><span class=\"nodeLabel \"> Develop Strategic Partnerships </foreignObject></g></g><g class=\"node default \" id=\"flowchart-I-20\" transform=\"translate(1349.1875, 529.1796875)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-119.84375\" y=\"-27\" width=\"239.6875\" height=\"54\"/><g class=\"label\" style=\"\" transform=\"translate(-89.84375, -12)\"><rect/><foreignObject width=\"179.6875\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"nodeLabel \"> Expand Marketing Efforts </foreignObject></g></g><g class=\"node default \" id=\"flowchart-J-22\" transform=\"translate(1667.2421875, 428.1796875)\"><polygon points=\"96.703125,0

193.40625,-96.703125 96.703125,-193.40625 0,-96.703125\" class=\"label-container\" transform=\"translate(-96.703125,96.703125)\"/><g class=\"label\" style=\"\" transform=\"translate(-69.703125, -12)\"><rect/><foreignObject width=\"139.40625\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"nodeLabel \"> Marketing Channels </foreignObject></g></g><g class=\"node default \" id=\"flowchart-K-24\" transform=\"translate(2109.625, 277.328125)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-110.25\" y=\"-27\" width=\"220.5\" height=\"54\"/><g class=\"label\" style=\"\" transform=\"translate(-80.25, -12)\"><rect/><foreignObject width=\"160.5\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"nodeLabel \"> Blog Posts and Articles </foreignObject></g></g><g class=\"node default \" id=\"flowchart-L-26\" transform=\"translate(2109.625, 405.328125)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-103.6015625\" y=\"-27\" width=\"207.203125\" height=\"54\"/><g class=\"label\" style=\"\" transform=\"translate(-73.6015625, -12)\"><rect/><foreignObject width=\"147.203125\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"nodeLabel \"> Twitter and LinkedIn </foreignObject></g></g><g class=\"node default \" id=\"flowchart-M-28\" transform=\"translate(2109.625, 521.328125)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-130\" y=\"-39\" width=\"260\" height=\"78\"/><g class=\"label\" style=\"\" transform=\"translate(-100, -24)\"><rect/><foreignObject width=\"200\" height=\"48\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table; white-space: break-spaces; line-height: 1.5; max-width: 200px; text-align: center; width: 200px;\"><span class=\"nodeLabel \"> Google Ads and Sponsored Content </foreignObject></g></g><g class=\"node default \" id=\"flowchart-N-30\"

transform=\"translate(2517.15625, 277.328125)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-130\" y=\"-39\" width=\"260\" height=\"78\"/><g class=\"label\" style=\"\" transform=\"translate(-100, -24)\"><rect/><foreignObject width=\"200\" height=\"48\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table; white-space: break-spaces; line-height: 1.5; max-width: 200px; text-align: center; width: 200px;\"><span class=\"nodeLabel \"> Establish Thought Leadership </foreignObject></g></g><g class=\"node default \" id=\"flowchart-O-32\" transform=\"translate(2517.15625, 405.328125)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-130\" y=\"-39\" width=\"260\" height=\"78\"/><g class=\"label\" style=\"\" transform=\"translate(-100, -24)\"><rect/><foreignObject width=\"200\" height=\"48\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table; white-space: break-spaces; line-height: 1.5; max-width: 200px; text-align: center; width: 200px;\"><span class=\"nodeLabel \"> Build Community Engagement </foreignObject></g></g><g class=\"node default \" id=\"flowchart-P-34\" transform=\"translate(2517.15625, 521.328125)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-104.8125\" y=\"-27\" width=\"209.625\" height=\"54\"/><g class=\"label\" style=\"\" transform=\"translate(-74.8125, -12)\"><rect/><foreignObject width=\"149.625\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"nodeLabel \"> Drive Website Traffic </foreignObject></g></g><g class=\"node default \" id=\"flowchart-Q-36\" transform=\"translate(2983.0078125, 388.11328125)\"><polygon points=\"119.1328125,0 238.265625,-119.1328125 119.1328125,-238.265625 0,-119.1328125\" class=\"label-container\" transform=\"translate(-119.1328125,119.1328125)\"/><g class=\"label\" style=\"\" transform=\"translate(-92.1328125, -12)\"><rect/><foreignObject width=\"184.265625\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"nodeLabel

\"> Partnership Opportunities </foreignObject></g></g><g class=\"node default \" id=\"flowchart-R-42\" transform=\"translate(3336.109375, 366.11328125)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-130\" y=\"-39\" width=\"260\" height=\"78\"/><g class=\"label\" style=\"\" transform=\"translate(-100, -24)\"><rect/><foreignObject width=\"200\" height=\"48\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table; white-space: break-spaces; line-height: 1.5; max-width: 200px; text-align: center; width: 200px;\"><span class=\"nodeLabel \"> Close Deals and Acquire Customers </foreignObject></g></g><g class=\"node default \" id=\"flowchart-S-44\" transform=\"translate(3336.109375, 603.1796875)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-130\" y=\"-39\" width=\"260\" height=\"78\"/><g class=\"label\" style=\"\" transform=\"translate(-100, -24)\"><rect/><foreignObject width=\"200\" height=\"48\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table; white-space: break-spaces; line-height: 1.5; max-width: 200px; text-align: center; width: 200px;\"><span class=\"nodeLabel \"> Reevaluate Marketing Strategy </foreignObject></g></g><g class=\"node default \" id=\"flowchart-T-48\" transform=\"translate(3646.109375, 366.11328125)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-130\" y=\"-39\" width=\"260\" height=\"78\"/><g class=\"label\" style=\"\" transform=\"translate(-100, -24)\"><rect/><foreignObject width=\"200\" height=\"48\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table; white-space: break-spaces; line-height: 1.5; max-width: 200px; text-align: center; width: 200px;\"><span class=\"nodeLabel \"> Deliver High-Quality Support </foreignObject></g></g><g class=\"node default \" id=\"flowchart-U-50\" transform=\"translate(3915.2890625, 366.11328125)\"><polygon points=\"89.1796875,0 178.359375,-89.1796875 89.1796875,-178.359375 0,-89.1796875\" class=\"label-container\" transform=\"translate(-89.1796875,89.1796875)\"/><g class=\"label\" style=\"\" transform=\"translate(-62.1796875, -12)\"><rect/><foreignObject width=\"124.359375\"

height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"nodeLabel \"> Support Channels </foreignObject></g></g><g class=\"node default \" id=\"flowchart-V-52\" transform=\"translate(4271.3515625, 314.11328125)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-92.2109375\" y=\"-27\" width=\"184.421875\" height=\"54\"/><g class=\"label\" style=\"\" transform=\"translate(-62.2109375, -12)\"><rect/><foreignObject width=\"124.421875\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"nodeLabel \"> Timely Responses </foreignObject></g></g><g class=\"node default \" id=\"flowchart-W-54\" transform=\"translate(4271.3515625, 510.11328125)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-113.6796875\" y=\"-27\" width=\"227.359375\" height=\"54\"/><g class=\"label\" style=\"\" transform=\"translate(-83.6796875, -12)\"><rect/><foreignObject width=\"167.359375\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"nodeLabel \"> Personalized Assistance </foreignObject></g></g><g class=\"node default \" id=\"flowchart-X-56\" transform=\"translate(4565.03125, 366.11328125)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-130\" y=\"-39\" width=\"260\" height=\"78\"/><g class=\"label\" style=\"\" transform=\"translate(-100, -24)\"><rect/><foreignObject width=\"200\" height=\"48\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table; white-space: break-spaces; line-height: 1.5; max-width: 200px; text-align: center; width: 200px;\"><span class=\"nodeLabel \"> Improve Customer Satisfaction </foreignObject></g></g><g class=\"node default \" id=\"flowchart-Y-60\" transform=\"translate(4875.03125, 366.11328125)\"><rect class=\"basic label-container\" style=\"\" data-id=\"abc\" data-et=\"node\" x=\"-130\" y=\"-39\" width=\"260\"

height=\"78\"/><g class=\"label\" style=\"\" transform=\"translate(-100, -24)\"><rect/><foreignObject width=\"200\" height=\"48\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table; white-space: break-spaces; line-height: 1.5; max-width: 200px; text-align: center; width: 200px;\"><span class=\"nodeLabel \"> Encourage Customer Loyalty </foreignObject></g></g><g class=\"node default \" id=\"flowchart-Z-62\" transform=\"translate(5127.84375, 727.19921875)\"><polygon points=\"72.8125,0 145.625,-72.8125 72.8125,-145.625 0,-72.8125\" class=\"label-container\" transform=\"translate(-72.8125,72.8125)\"/><g class=\"label\" style=\"\" transform=\"translate(-45.8125, -12)\"><rect/><foreignObject width=\"91.625\" height=\"24\"><div xmlns=\"http://www.w3.org/1999/xhtml\" style=\"display: table-cell; white-space: nowrap; line-height: 1.5; max-width: 200px; text-align: center;\"><span class=\"nodeLabel \"> Growth Loop </foreignObject></g></g></g></g></svg>"
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    "import os\n",
    "\n",

```
"import mermaid as md\n",
"from dotenv import load_dotenv\n",
"from loguru import logger\n",
"from mermaid.graph import Graph\n",
"from swarm_models import OpenAIChat\n",
"from swarms import Agent, extract_code_from_markdown\n",
"from uuid import uuid4\n",
"\n",
"load_dotenv()\n",
"\n",
"# Example with Groq\n",
"groq_api_key = os.getenv(\"GROQ_API_KEY\")\n",
"model = OpenAIChat(\n",
"    openai_api_base=\"https://api.groq.com/openai/v1\",\n",
"    openai_api_key=groq_api_key,\n",
"    model_name=\"llama-3.1-70b-versatile\",\n",
"    temperature=0.1,\n",
"    max_tokens=4000,\n",
")\n",
"\n",
"\n",
"TOT_SYS_PROMPT = \"\"\"\n",
```

"Create an agent to analyze a business strategy for a product or company and generate a Mermaid tree diagram that outlines potential paths, execution methods, risks, failures, and especially emphasizes failure scenarios. The agent should facilitate an interactive dialogue to refine and iterate upon the generated strategy model.\n",

"\n",

"Provide the input business strategy details to the agent, and the agent will deliver a Mermaid graph syntax that captures the strategic dynamics in real-time.\n",

"\n",

"# Steps\n",

"\n",

"1. **Strategy Analysis**: \n",

" - Break down the input strategy into key components such as objectives, resources, market conditions, competitors, and operational steps.\n",

" - Identify potential outcomes, paths, and decision points within the strategy.\n",

"\n",

"2. **Failure Identification**:\n",

" - Analyze and list possible failure points in the strategy.\n",

" - Emphasize these points in the Mermaid diagram.\n",

"\n",

"3. **Graph Construction**:\n",

" - Translate the analyzed components and their relationships into a Mermaid syntax for easy visualization.\n",

" - Ensure the Mermaid syntax can be rendered effectively in real-time and allows for updates based on ongoing dialogue and feedback.\n",

"\n",

"4. **Iterative Feedback**:\n",

" - Engage in an interactive dialogue with the user to refine the business strategy.\n",

" - Allow the user to input additional data, modify elements, and explore different scenarios within the graph.\n",

"\n",

```
"# Output Format\n",
"\n",
"The output should be in Mermaid syntax suitable for real-time rendering. Provide detailed nodes and edges to illustrate paths, key decision points, and failure emphasis.\n",
"\n",
"# Examples\n",
"\n",
"## Example 1\n",
"\n",
"**Input:**  \n",
"Strategy: Expand market presence for Product X in international markets.\n",
"\n",
"**Output:**  \n",
"```mermaid\n",
"graph LR\n",
"    Start[Expanding Market]\n",
"    A[Identify Target Markets] --> B[Assess Market Conditions]\n",
"    B --> C{Main Potential Issues}\n",
"    C -->|Logistics| D[High Costs]\n",
"    C -->|Regulations| E[Compliance Challenges]\n",
"    E -->|Failure| F[Potential Penalties]\n",
"    F -.->|Reassessment| Start\n",
"    B --> G{Success Probability}\n",
"    G -->|High| H[Implement Marketing Strategy]\n",
"    G -->|Low| C\n",
"```\n",
```

```
    "\n",
    "(Note: In real scenarios, the output will include all possible paths and failure points from the strategy described, iteratively refined in the interaction.)\n",
    "\n",
    "# Notes\n",
    "\n",
    "- Ensure that the graph highlights strategic failure points prominently.\n",
    "- Maintain flexibility to accommodate additional user input and iterate upon the presented strategic model.\n",
    "- The interaction should support the continuous refinement of the strategy and real-time updates to the Mermaid diagram.\n",
    "- Only output the Mermaid graph syntax, nothing else.\n",
    "- Always start with the word \"```mermaid\" and end with \"```\"\n",
    "- Only output the Mermaid graph syntax, nothing else.\n",
    "- Make sure make the graph as big as possible to see all the details.\n",
    "\"\"\"\n",
    "\n",
    "# Initialize the agent\n",
    "agent = Agent(\n",
    "    agent_name=\"TOT-Agent\",\n",
    "    system_prompt=TOT_SYS_PROMPT,\n",
    "    llm=model,\n",
    "    max_loops=1,\n",
    "    autosave=True,\n",
    "    dashboard=False,\n",
    "    verbose=True,\n",
```

```
"    dynamic_temperature_enabled=True,\n",
"    saved_state_path=\"tot_agent.json\",\n",
"    user_name=\"swarms_corp\",\n",
"    retry_attempts=1,\n",
"    context_length=200000,\n",
"    return_step_meta=False,\n",
"    output_type=\"string\",\n",
"    streaming_on=False,\n",
"    max_tokens=4000,\n",
")\n",
"\n",
"\n",
"\n",
"def tree_of_thoughts_agent(agent: Agent, task: str, prev_graph: str = None):\n",
"    \"\"\"\n",
"    Run the Tree of Thoughts agent and build on previous graph if provided.\n",
"    \n",
"    Args:\n",
"        agent (Agent): The agent to run\n",
"        task (str): The task to process\n",
"        prev_graph (str): Optional previous graph to build upon\n",
"        \n",
"    Returns:\n",
"        md.Mermaid: The rendered Mermaid graph\n",
"    \"\"\"\n",
"    logger.info(f\"Running Tree of Thoughts agent with task: {task}\")\n",
```

```
    "    \n",
    "    if prev_graph:\n",
    "        # Append new graph elements to previous graph\n",
    "        logger.debug(\"Building on previous graph\")\n",
    "        graph = agent.run(task + f\"\\nPrevious graph:\\n{prev_graph}\")\n",
    "        logger.debug(f\"Generated graph: {graph}\")\n",
    "        print(graph)\n",
    "    else:\n",
    "        logger.debug(\"Generating new graph\")\n",
    "        graph = agent.run(task)\n",
    "        logger.debug(f\"Generated graph: {graph}\")\n",
    "    \n",
    "    logger.info(\"Rendering final Mermaid graph\")\n",
    "    graph_code = extract_code_from_markdown(graph)\n",
    "    \n",
    "    graph = Graph('Sequence-diagram', graph_code)\n",
    "    render = md.Mermaid(graph, width=3800, height=3000) # Increase size to see all details\n",
    "    render.to_png(f\"business_strategy_graph_{uuid4()}.png\")\n",
    "    \n",
    "    logger.info(f\"Saved graph to business_strategy_graph_{uuid4()}.png\")\n",
    "    return render\n",
    "\n",
    "\n",
    "    "tree_of_thoughts_agent(agent, \"How can we grow a spreadsheet swarm product for b2b applications, it's a spreadsheet of a swarm of agents that all run concurrently. How do we grow this product \")\n"
```

```
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  {
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    "# Growth Strategy Agent\n",
    "\n",
    "- Input: Business strategy for a product or company\n",
    "- Focuses on growth strategy for a product or company\n",
    "- Utilizes blitzscaling methodology\n",
    "- Generates a mermaid graph of different growth strategies that can be used to grow a product or company\n",
    "- Outputs a mermaid graph syntax that can be rendered in real-time"
   ]
  },
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"File \u001b[0;32m/Library/Frameworks/Python.framework/Versions/3.12/lib/python3.12/site-packages/swarms/__init__.py:10\u001b[0m\n\u001b[1;32m 7\u001b[0m executor\u001b[38;5;241m.\u001b[39msubmit(bootup)\n\u001b[1;32m 8\u001b[0m executor\u001b[38;5;241m.\u001b[39msubmit(activate_sentry)\n\u001b[0;32m---> 10\u001b[0m

\u001b[38;5;28;01mfrom\u001b[39;00m
\u001b[38;5;21;01mswarms\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01magents\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m \u001b[38;5;241m*\u001b[39m
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\u001b[38;5;28;01mfrom\u001b[39;00m
\u001b[38;5;21;01mswarms\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01magents\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mstopping_conditions\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m (\n\u001b[1;32m 2\u001b[0m
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(...)\u001b[0m\n\u001b[1;32m 11\u001b[0m check_success,\n\u001b[1;32m 12\u001b[0m
)\n\u001b[0;32m---> 13\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m
\u001b[38;5;21;01mswarms\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01magents\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mtool_agent\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m ToolAgent\n\u001b[1;32m 14\u001b[0m
\u001b[38;5;28;01mfrom\u001b[39;00m

\u001b[38;5;21;01mswarms\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01magents\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mcreate_agents_from_yaml\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m (\n\u001b[1;32m 15\u001b[0m create_agents_from_yaml,\n\u001b[1;32m 16\u001b[0m)\n\u001b[1;32m 17\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mswarms\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01magents\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mprompt_generator_agent\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m PromptGeneratorAgent\n",

"File \u001b[0;32m/Library/Frameworks/Python.framework/Versions/3.12/lib/python3.12/site-packages/swarms/agents/tool_agent.py:3\u001b[0m\n\u001b[1;32m 1\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mtyping\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m Any, Optional, Callable\n\u001b[0;32m----> 3\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mswarms\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mstructs\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01magent\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m Agent\n\u001b[1;32m 4\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mswarms\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mtools\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mjson_former\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m Jsonformer\n\u001b[1;32m 5\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mswarms\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mutils\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mloguru_logger\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m logger\n",

"File

\u001b[0;32m/Library/Frameworks/Python.framework/Versions/3.12/lib/python3.12/site-packages/swarms/structs/__init__.py:1\u001b[0m\n\u001b[0;32m----> 1\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mswarms\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mstructs\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01magent\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m Agent\n\u001b[1;32m   2\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mswarms\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mstructs\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mauto_swarm\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m AutoSwarm, AutoSwarmRouter\n\u001b[1;32m   3\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mswarms\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mstructs\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mbase_structure\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m BaseStructure\n",

"File \u001b[0;32m/Library/Frameworks/Python.framework/Versions/3.12/lib/python3.12/site-packages/swarms/structs/agent.py:55\u001b[0m\n\u001b[1;32m   53\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mswarms\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mutils\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mpdf_to_text\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m pdf_to_text\n\u001b[1;32m   54\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mswarms\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mutils\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mrun_on_cpu\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m run_on_cpu\n\u001b[0;32m---> 55\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mclusterops\u001b[39;00m

\u001b[38;5;28;01mimport\u001b[39;00m (\n\u001b[1;32m 56\u001b[0m execute_on_gpu,\n\u001b[1;32m 57\u001b[0m execute_with_cpu_cores,\n\u001b[1;32m 58\u001b[0m)\n\u001b[1;32m 59\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mswarms\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01magents\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mape_agent\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m auto_generate_prompt\n\u001b[1;32m 60\u001b[0m \u001b[38;5;28;01mimport\u001b[39;00m \u001b[38;5;21;01myaml\u001b[39;00m\n",
"File \u001b[0;32m/Library/Frameworks/Python.framework/Versions/3.12/lib/python3.12/site-packages/clusterops/__init__.py:1\u001b[0m\n\u001b[0;32m----> 1\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mclusterops\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mmain\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m (\n\u001b[1;32m 2\u001b[0m list_available_cpus,\n\u001b[1;32m 3\u001b[0m execute_with_cpu_cores,\n\u001b[1;32m 4\u001b[0m list_available_gpus,\n\u001b[1;32m 5\u001b[0m execute_on_gpu,\n\u001b[1;32m 6\u001b[0m execute_on_multiple_gpus,\n\u001b[1;32m 7\u001b[0m)\n\u001b[1;32m 9\u001b[0m __all__ \u001b[38;5;241m=\u001b[39m [\u001b[38;5;124m\"\u001b[39m\u001b[38;5;124mlist_available_cpus\u001b[39m\u001b[38;5;124m\"\u001b[39m,
\u001b[38;5;124m\"\u001b[39m\u001b[38;5;124mexecute_with_cpu_cores\u001b[39m\u001b[38;5;124m\"\u001b[39m,
\u001b[38;5;124m\"\u001b[39m\u001b[38;5;124mlist_available_gpus\u001b[39m\u001b[38;5;124m\"\u001b[39m,
\u001b[38;5;124m\"\u001b[39m\u001b[38;5;124mexecute_on_gpu\u001b[39m\u001b[38;5;124m\"\u001b[39m,
\u001b[38;5;124m\"\u001b[39m\u001b[38;5;124mexecute_on_multiple_gpus\u001b[39m\u001b[38;

5;124m\"\u001b[39m]\n",

"File

\u001b[0;32m/Library/Frameworks/Python.framework/Versions/3.12/lib/python3.12/site-packages/cl

usterops/main.py:6\u001b[0m\n\u001b[1;32m 4\u001b[0m

\u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mloguru\u001b[39;00m

\u001b[38;5;28;01mimport\u001b[39;00m logger\n\u001b[1;32m 5\u001b[0m

\u001b[38;5;28;01mimport\u001b[39;00m

\u001b[38;5;21;01mGPUtil\u001b[39;00m\n\u001b[0;32m----> 6\u001b[0m

\u001b[38;5;28;01mimport\u001b[39;00m \u001b[38;5;21;01mray\u001b[39;00m\n\u001b[1;32m

9\u001b[0m \u001b[38;5;28;01mdef\u001b[39;00m

\u001b[38;5;21mlist_available_cpus\u001b[39m()

\u001b[38;5;241m-\u001b[39m\u001b[38;5;241m>\u001b[39m

List[\u001b[38;5;28mint\u001b[39m]:\n\u001b[1;32m 10\u001b[0m \u001b[38;5;250m

\u001b[39m\u001b[38;5;124;03m\"\"\"\u001b[39;00m\n\u001b[1;32m 11\u001b[0m

\u001b[38;5;124;03m Lists all available CPU cores.\u001b[39;00m\n\u001b[1;32m 12\u001b[0m

\n\u001b[0;32m (...)\u001b[0m\n\u001b[1;32m 17\u001b[0m \u001b[38;5;124;03m

RuntimeError: If no CPUs are found.\u001b[39;00m\n\u001b[1;32m 18\u001b[0m

\u001b[38;5;124;03m \"\"\"\u001b[39;00m\n",

"File

\u001b[0;32m/Library/Frameworks/Python.framework/Versions/3.12/lib/python3.12/site-packages/ra

y/__init__.py:113\u001b[0m\n\u001b[1;32m 105\u001b[0m _config

\u001b[38;5;241m=\u001b[39m _Config()\n\u001b[1;32m 107\u001b[0m

\u001b[38;5;28;01mfrom\u001b[39;00m

\u001b[38;5;21;01mray\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01m_priv

ate\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mstate\u001b[39;00m

\u001b[38;5;28;01mimport\u001b[39;00m (\u001b[38;5;66;03m# noqa:

E402,F401\u001b[39;00m\n\u001b[1;32m 108\u001b[0m nodes,\n\u001b[1;32m 109\u001b[0m timeline,\n\u001b[1;32m 110\u001b[0m cluster_resources,\n\u001b[1;32m 111\u001b[0m available_resources,\n\u001b[1;32m 112\u001b[0m)\n\u001b[0;32m--> 113\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mray\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01m_priv ate\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mworker\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m (\u001b[38;5;66;03m# noqa: E402,F401\u001b[39;00m\n\u001b[1;32m 114\u001b[0m LOCAL_MODE,\n\u001b[1;32m 115\u001b[0m SCRIPT_MODE,\n\u001b[1;32m 116\u001b[0m WORKER_MODE,\n\u001b[1;32m 117\u001b[0m RESTORE_WORKER_MODE,\n\u001b[1;32m 118\u001b[0m SPILL_WORKER_MODE,\n\u001b[1;32m 119\u001b[0m cancel,\n\u001b[1;32m 120\u001b[0m get,\n\u001b[1;32m 121\u001b[0m get_actor,\n\u001b[1;32m 122\u001b[0m get_gpu_ids,\n\u001b[1;32m 123\u001b[0m init,\n\u001b[1;32m 124\u001b[0m is_initialized,\n\u001b[1;32m 125\u001b[0m put,\n\u001b[1;32m 126\u001b[0m kill,\n\u001b[1;32m 127\u001b[0m remote,\n\u001b[1;32m 128\u001b[0m shutdown,\n\u001b[1;32m 129\u001b[0m wait,\n\u001b[1;32m 130\u001b[0m)\n\u001b[1;32m 132\u001b[0m \u001b[38;5;28;01mfrom\u001b[39;00m \u001b[38;5;21;01mray\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01m_priv ate\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mray_logging\u001b[39;00m\u001b[38;5;21;01m.\u001b[39;00m\u001b[38;5;21;01mlogging_config\u001b[39;00m \u001b[38;5;28;01mimport\u001b[39;00m LoggingConfig \u001b[38;5;66;03m# noqa: E402\u001b[39;00m\n\u001b[1;32m 134\u001b[0m \u001b[38;5;66;03m# We import ray.actor because some code is run in actor.py which initializes\u001b[39;00m\n\u001b[1;32m 135\u001b[0m \u001b[38;5;66;03m# some functions in the worker.\u001b[39;00m\n",

"File

\u001b[0;32m/Library/Frameworks/Python.framework/Versions/3.12/lib/python3.12/site-packages/ray/_private/worker.py:1212\u001b[0m\n\u001b[1;32m 1207\u001b[0m \u001b[38;5;28;01mdef\u001b[39;00m \u001b[38;5;21mdisconnect\u001b[39m(\u001b[38;5;28mself\u001b[39m):\n\u001b[1;32m 1208\u001b[0m \u001b[38;5;66;03m# Include disconnect() to stay consistent with ClientContext\u001b[39;00m\n\u001b[1;32m 1209\u001b[0m ray\u001b[38;5;241m.\u001b[39mshutdown()\n\u001b[0;32m-> 1212\u001b[0m global_worker \u001b[38;5;241m=\u001b[39m \u001b[43mWorker\u001b[49m\u001b[43m(\u001b[49m\u001b[43m)\u001b[49m\n\u001b[1;32m 1213\u001b[0m \u001b[38;5;124;03m\"\"\"Worker: The global Worker object for this worker process.\u001b[39;00m\n\u001b[1;32m 1214\u001b[0m \n\u001b[1;32m 1215\u001b[0m \u001b[38;5;124;03mWe use a global Worker object to ensure that there is a single worker object\u001b[39;00m\n\u001b[1;32m 1216\u001b[0m \u001b[38;5;124;03mper worker process.\u001b[39;00m\n\u001b[1;32m 1217\u001b[0m \u001b[38;5;124;03m\"\"\"\u001b[39;00m\n\u001b[1;32m 1219\u001b[0m _global_node \u001b[38;5;241m=\u001b[39m \u001b[38;5;28;01mNone\u001b[39;00m\n",

"File \u001b[0;32m/Library/Frameworks/Python.framework/Versions/3.12/lib/python3.12/site-packages/ray/_private/worker.py:436\u001b[0m, in \u001b[0;36mWorker.__init__\u001b[0;34m(self)\u001b[0m\n\u001b[1;32m 431\u001b[0m \u001b[38;5;28mself\u001b[39m\u001b[38;5;241m.\u001b[39mactors \u001b[38;5;241m=\u001b[39m {}\n\u001b[1;32m 432\u001b[0m \u001b[38;5;66;03m# When the worker is constructed. Record the original value of the\u001b[39;00m\n\u001b[1;32m 433\u001b[0m \u001b[38;5;66;03m# (CUDA_VISIBLE_DEVICES, ONEAPI_DEVICE_SELECTOR, ROCR_VISIBLE_DEVICES,\u001b[39;00m\n\u001b[1;32m 434\u001b[0m \u001b[38;5;66;03m# NEURON_RT_VISIBLE_CORES, TPU_VISIBLE_CHIPS, ..) environment

variables.\u001b[39;00m\n\u001b[1;32m 435\u001b[0m \u001b[38;5;28mself\u001b[39m\u001b[38;5;241m.\u001b[39moriginal_visible_accelerator_ids \u001b[38;5;241m=\u001b[39m (\n\u001b[0;32m--> 436\u001b[0m \u001b[43mray\u001b[49m\u001b[38;5;241;43m.\u001b[39;49m\u001b[43m_private\u001b[49m\u001b[38;5;241m.\u001b[39mutils\u001b[38;5;241m.\u001b[39mget_visible_accelerator_ids()\n\u001b[1;32m 437\u001b[0m)\n\u001b[1;32m 438\u001b[0m \u001b[38;5;66;03m# A dictionary that maps from driver id to SerializationContext\u001b[39;00m\n\u001b[1;32m 439\u001b[0m \u001b[38;5;66;03m# TODO: clean up the SerializationContext once the job finished.\u001b[39;00m\n\u001b[1;32m 440\u001b[0m \u001b[38;5;28mself\u001b[39m\u001b[38;5;241m.\u001b[39mserialization_context_map \u001b[38;5;241m=\u001b[39m {}\n",
"\u001b[0;31mAttributeError\u001b[0m: partially initialized module 'ray' has no attribute '_private' (most likely due to a circular import)"
]
}
],
"source": [
"\n",
"import os\n",
"\n",
"import mermaid as md\n",
"from dotenv import load_dotenv\n",
"from loguru import logger\n",
"from mermaid.graph import Graph\n",
"from swarm_models import OpenAIChat\n",
"from swarms import Agent, extract_code_from_markdown\n",

```
"from uuid import uuid4\n",
"\n",
"load_dotenv()\n",
"\n",
"# Example with Groq\n",
"groq_api_key = os.getenv(\"GROQ_API_KEY\")\n",
"model = OpenAIChat(\n",
"    openai_api_base=\"https://api.groq.com/openai/v1\",\n",
"    openai_api_key=groq_api_key,\n",
"    model_name=\"llama-3.1-70b-versatile\",\n",
"    temperature=0.1,\n",
"    max_tokens=4000,\n",
")\n",
"\n",
"GROWTH_STRATEGY_SYS_PROMPT = \"\"\"\n",
 "You're a hypergrowth strategist, your job is to take a business strategy for a product or company and generate a mermaid graph that outlines potential growth strategies focusing on hyper-growth opportunities using blitzscaling techniques.\n",
"\n",
"\n",
"- **Input**: A detailed business strategy for a product or company.\n",
    "- **Objective**: Identify and outline potential growth strategies focusing on hyper-growth opportunities using blitzscaling techniques.\n",
"- **Output**: A mermaid graph in syntax form which can be rendered in real-time.\n",
"\n",
"# Steps\n",
```

"\n",

"1. **Analyze**: Review the provided business strategy to understand the current position, strengths, and goals of the product or company.\n",

"2. **Identify Growth Opportunities**: Utilize blitzscaling principles to pinpoint areas where rapid expansion is feasible. Consider market size, distribution channels, and technological innovations.\n",

"3. **Draft Strategy Elements**: Break down the overarching growth strategy into actionable elements or nodes. These should include key tactics, potential risks, and strategic pivots.\n",

"4. **Create Mermaid Graph**: Map out the identified nodes and connections, ensuring a clear narrative of the growth trajectory. Incorporate decision points, dependencies, and outcomes.\n",

"\n",

"# Output Format\n",

"\n",

"The output should be in mermaid syntax, precisely formatted to ensure it can be rendered with mermaid tools. Ensure correct use of indentation and syntax for nodes, connections, and annotations.\n",

"\n",

"# Example\n",

"\n",

"**Input**: \"[Company X's strategic goal is to capture a significant share of the online education market by leveraging its existing technology platform while focusing on user acquisition, content partnerships, and international expansion.]\"\n",

"\n",

"**Output**:\n",

"```\n",

"graph TD;\n",

"   A[Start] --> B[Leverage Tech Platform];\n",

```
"    B --> C[User Acquisition];\n",
"    C --> D[Content Partnerships];\n",
"    D --> E[International Expansion];\n",
"    E --> F[Capture Market Share];\n",
"    F --> G[Evaluate and Iterate];\n",
"```\n",
"(The example above should be adjusted based on the specific input company strategy, involving more nodes and potential paths.)\n",
"\n",
"# Notes\n",
"\n",
"- Ensure the strategy aligns with blitzscaling concepts: speed over efficiency, accepting risks, and focusing on winner-takes-all markets.\n",
"- Consider potential roadblocks and prepare bifurcation points within the graph where strategic adjustments might be necessary. \n",
"- The graph should visually narrate the strategy's progression and decision-making stages.\n",
"- Maintain flexibility to accommodate additional user input and iterate upon the presented strategic model.\n",
"- The interaction should support the continuous refinement of the strategy and real-time updates to the Mermaid diagram.\n",
"- Only output the Mermaid graph syntax, nothing else.\n",
"- Always start with the word \"```mermaid\" and end with \"```\"\n",
"- Only output the Mermaid graph syntax, nothing else.\n",
"- Make sure make the graph as big as possible to see all the details.\n",
"\"\"\"\n",
"\n",
```

```
"# Initialize the agent\n",
"growth_strategy_agent = Agent(\n",
"    agent_name=\"Growth-Strategy-Agent\",\n",
"    system_prompt=GROWTH_STRATEGY_SYS_PROMPT,\n",
"    llm=model,\n",
"    max_loops=1,\n",
"    autosave=True,\n",
"    dashboard=False,\n",
"    verbose=True,\n",
"    dynamic_temperature_enabled=True,\n",
"    saved_state_path=\"growth_strategy_agent.json\",\n",
"    user_name=\"swarms_corp\",\n",
"    retry_attempts=1,\n",
"    context_length=200000,\n",
"    return_step_meta=False,\n",
"    output_type=\"string\",\n",
"    streaming_on=False,\n",
"    max_tokens=4000,\n",
")\n",
"\n",
"\n",
"\n",
"def generate_growth_strategy(agent: Agent, task: str, prev_graph: str = None):\n",
"    \"\"\"\n",
"    Run the Tree of Thoughts agent and build on previous graph if provided.\n",
"    \n",
```

```
"    Args:\n",
"        agent (Agent): The agent to run\n",
"        task (str): The task to process\n",
"        prev_graph (str): Optional previous graph to build upon\n",
"        \n",
"    Returns:\n",
"        md.Mermaid: The rendered Mermaid graph\n",
"    \"\"\"\n",
"    logger.info(f\"Running Tree of Thoughts agent with task: {task}\")\n",
"    \n",
"    if prev_graph:\n",
"        # Append new graph elements to previous graph\n",
"        logger.debug(\"Building on previous graph\")\n",
"        graph = agent.run(task + f\"\\nPrevious graph:\\n{prev_graph}\")\n",
"        logger.debug(f\"Generated graph: {graph}\")\n",
"        print(graph)\n",
"    else:\n",
"        logger.debug(\"Generating new graph\")\n",
"        graph = agent.run(task)\n",
"        logger.debug(f\"Generated graph: {graph}\")\n",
"    \n",
"    logger.info(\"Rendering final Mermaid graph\")\n",
"    graph_code = extract_code_from_markdown(graph)\n",
"    \n",
"    graph = Graph('Sequence-diagram', graph_code)\n",
"    render = md.Mermaid(graph, width=3800, height=3000) # Increase size to see all details\n",
```

```
    "    render.to_png(f\"growth_strategy_graph_{uuid4()}.png\") # Save the graph as an image\n",
    "    \n",
    "    logger.info(f\"Saved graph to growth_strategy_graph_{uuid4()}.png\")\n",
    "    return render\n",
    "\n",
    "\n",
      "generate_growth_strategy(growth_strategy_agent, \"How can we grow a spreadsheet swarm product for b2b applications, it's a spreadsheet of a swarm of agents that all run concurrently. How do we grow this product \")\n"
   ]
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