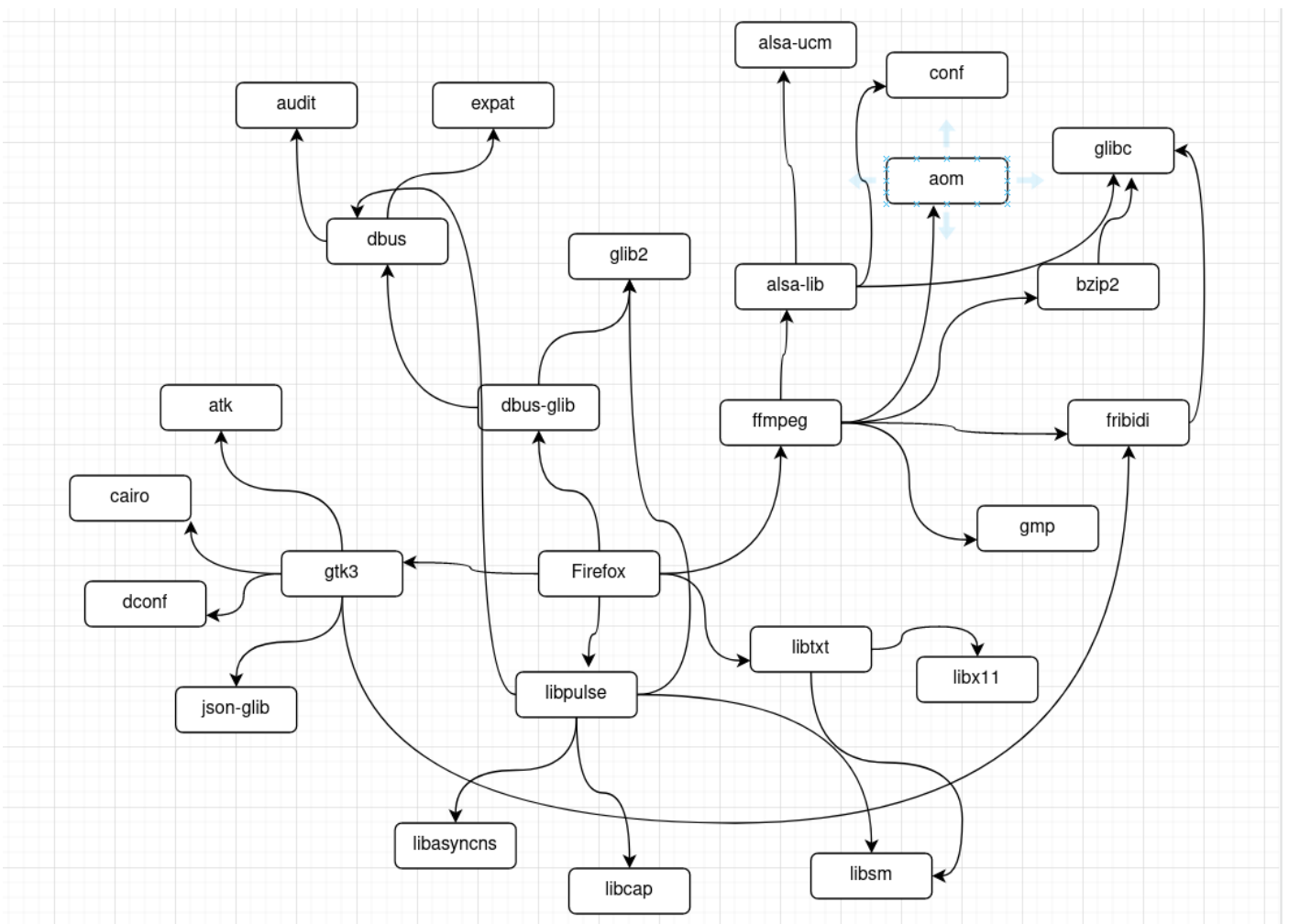


REG NO. : 20BAI1005

Search methods DFS and BFS



BFS

```
dependencies = {
    'firefox': ['dbus-glib', 'ffmpeg', 'gtk3', 'libpulse', 'libxt'],
    'dbus-glib': ['dbus', 'glib2'],
    'ffmpeg': ['alsa-lib', 'aom', 'bzip2', 'fribidi', 'gmp'],
    'gtk3': ['atk', 'cairo', 'dconf', 'fribidi', 'json-glib'],
    'libpulse': ['dbus', 'libasyns', 'libcap', 'libsm', 'glib2'],
    'libxt': ['libsm', 'libx11'],
    'dbus': ['audit', 'expat'],
    'glib2': ['libffi', 'zlib', 'pcre'],
    'alsa-lib': ['glibc', 'alsa-ucm', 'conf'],
    'aom': ['gcc-libs'],
    'bzip2': ['glibc'],
    'fribidi': ['glibc'],
    'gmp': ['gcc-libs'],
    'atk': ['glib2'],
    'cairo': ['glib2', 'libpng'],
    'dconf': ['glib2', 'dbus'],
    'json-glib': ['glib2'],
    'libasyns': ['glibc', 'lynx'],
    'libcap': ['glibc', 'pam'],
    'libsm': ['libice', 'libutil-linux'],
    'glib2': ['libffi', 'pcre', 'zlib', 'util-linux-libs'],
    'libsm': ['libice', 'xtrans', 'xorgproto'],
    'libx11': ['libxcb', 'xorgproto', 'xtrans']
}
```

```
def BFS(package, dependencies = dependencies):
    visited = []
    queue = []
    queue.append(package)
    visited.append(package)

    while queue:
        pkg = queue.pop(0)
        print("-", pkg)
        if pkg in dependencies:
            for subpkg in dependencies[pkg]:
                if subpkg not in visited:
                    visited.append(subpkg)
                    queue.append(subpkg)
```

```
BFS('glib2')
✓ 0.7s
- glib2
- libffi
- pcre
- zlib
- util-linux-libs
```

DFS

```
def dfs(graph, start, visited=None):
    if visited is None:
        visited = set()
    visited.add(start)
    print(start)
    for next in graph[start] - visited:
        dfs(graph, next, visited)
    return visited
```

```
dependencies = {
    'firefox' : set(['dbus-glib', 'ffmpeg', 'gtk3', 'libpulse', 'libxt']),
    'dbus-glib' : set(['dbus', 'glib2']),
    'ffmpeg' : set(['alsa-lib', 'aom', 'bzip2', 'fribidi', 'gmp']),
    'gtk3' : set(['atk', 'cairo', 'dconf', 'fribidi', 'json-glib']),
    'libpulse' : set(['dbus', 'libasyns', 'libcap', 'libsm', 'glib2']),
    'libxt' : set(['libsm', 'libx11']),
    'dbus' : set(['audit', 'expat']),
    'glib2' : set(['libffi', 'zlib', 'pcre']),
    'alsa-lib' : set(['glibc', 'alsa-ucm', 'conf']),
    'aom' : set(['gcc-libs']),
    'bzip2' : set(['glibc']),
    'fribidi' : set(['glibc']),
    'gmp' : set(['gcc-libs']),
    'atk' : set(['glib2']),
    'cairo' : set(['glib2', 'libpng']),
    'dconf' : set(['glib2', 'dbus']),
    'json-glib' : set(['glib2']),
    'libasyns' : set(['glibc', 'lynx']),
    'libcap' : set(['glibc', 'pam']),
    'libsm' : set(['libice', 'libutil-linux']),
    'glib2' : set(['libffi', 'pcre', 'zlib', 'util-linux-libs']),
    'libsm' : set(['libice', 'xtrans', 'xorgproto']),
    'libx11' : set(['libxcb', 'xorgproto', 'xtrans'])
}
```

```
dfs(dependencies, 'dconf')
```

```
dconf
glib2
zlib
```