

# Lec 11

File IO. Network IO

# POWeek 3 – 8am

- A) Graph
- B) Burger
- C) Normal/inverse triforme
- D) Rocket ship

# POWeek 3 – 2pm

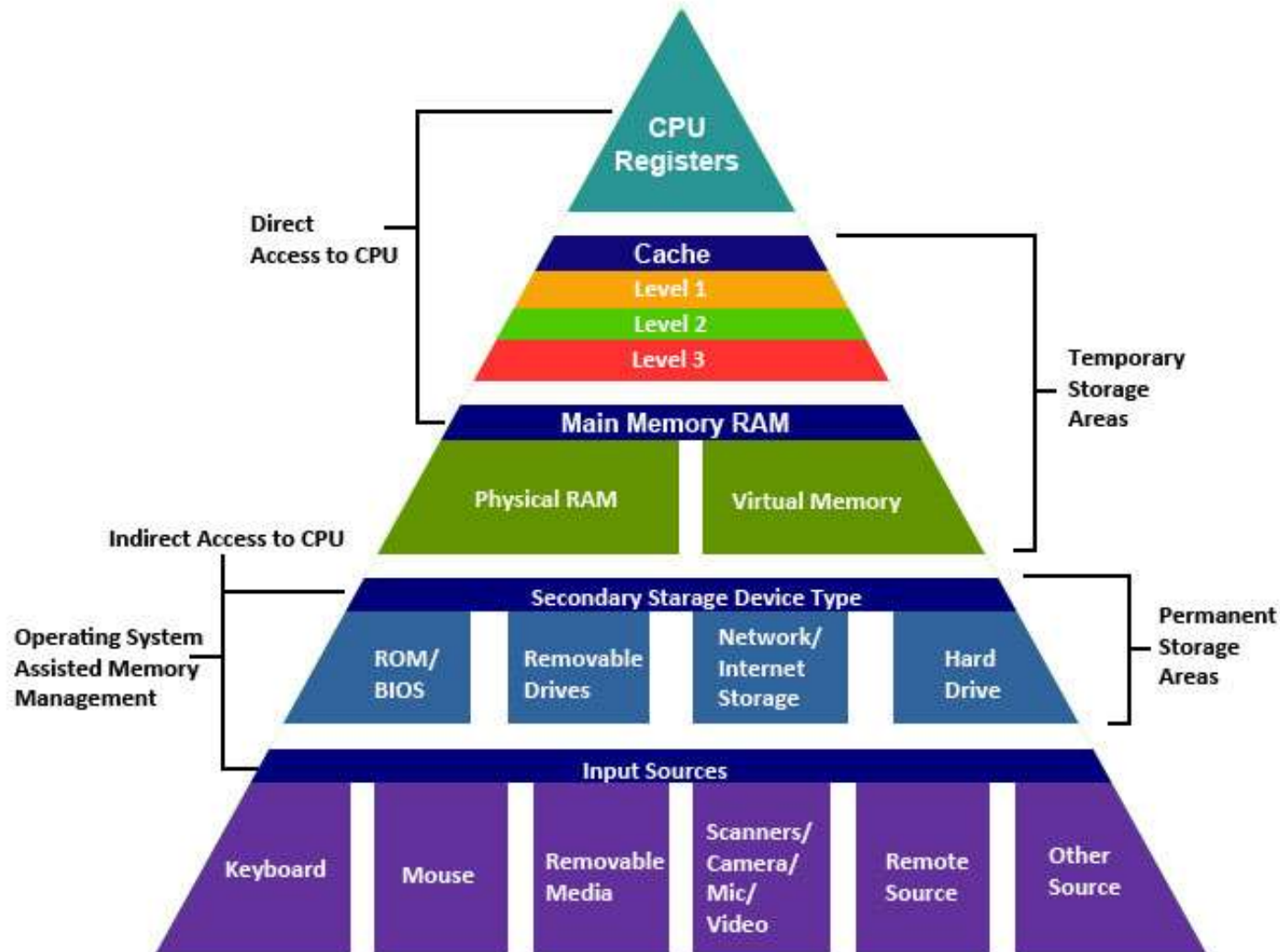
- A) “drink”
- B) Jigglypuff
- C) Image

# File Input

```
import java.io.FileInputStream;
import java.io.IOException;

public static void main() throws IOException {
    FileInputStream fs = new FileInputStream("file.txt");
    fs.read();
    fs.close();
}
```

# What is the downside of reading one byte at a time?



# Buffered Input

```
import java.io.FileInputStream;
import java.io.BufferedReader;
import java.io.IOException;

public static void main() throws IOException {
    FileInputStream fs = new FileInputStream("file.txt");
    BufferedReader bfs = new BufferedReader(fs);
    bfs.read();
    bfs.close();
}
```

# Time of SlowRead.java vs. BufferRead.java reading bible (4.4 MB)

- A) About the same
- B) BufferRead is ~2x faster
- C) BufferRead is ~10x faster
- ➡ D) BufferRead is ~100x faster
- E) BufferRead is ~200x faster

# Scanner

<http://docs.oracle.com/javase/7/docs/api/java/util/Scanner.html>

```
import java.io.FileInputStream;
import java.util.Scanner;
import java.io.IOException;

public static void main() throws IOException {
    FileInputStream f = new FileInputStream("adam.txt");
    Scanner scnr = new Scanner(f);
    scnr.next();
    scnr.close();
}
```

# File Output

```
import java.io.FileOutputStream;
import java.io.IOException;

public static void main() throws IOException {
    FileOutputStream fs = new FileOutputStream("out.txt")
    fs.write(' ');
    fs.close();
}
```

# Buffered Output

```
import java.io.FileOutputStream;
import java.io.BufferedOutputStream;
import java.io.IOException;

public static void main() throws IOException {
    FileOutputStream fs = new FileOutputStream("out.txt")
    BufferedOutputStream bfs = new BufferedOutputStream(fs);
    bfs.write(' ');
    bfs.close();
}
```

# Time of SlowWrite.java vs. BuffWrite.java 1M #s(~1MB)

- A) About the same
- B) BuffWrite is ~2x faster
- C) BuffWrite is ~10x faster
- ➡ D) BuffWrite is ~100x faster
- E) BuffWrite is ~200x faster

# PrintWriter

<http://docs.oracle.com/javase/7/docs/api/java/io/PrintWriter.html>

```
import java.io.PrintWriter;  
import java.io.IOException;  
  
public static void main() throws IOException {  
    PrintWriter pw = new PrintWriter("output.txt");  
    pw.print("hi");  
    pw.println("new line");  
    pw.close();  
}
```

# What's in output.txt when done?

```
import java.io.PrintWriter;  
import java.io.IOException;  
  
public static void main() throws IOException {  
    PrintWriter pw = new PrintWriter("output.txt");  
    pw.print("hi");  
    pw.println("new line");  
}
```

A) hi  
new line



B) <empty file>

C) Depends on if "output.txt" already had txt in it

D) Runtime error

# Reading from web

```
import java.net.URL;
import java.util.Scanner;
import java.io.IOException;

public static void main() throws IOException {
    URL url = new URL("http://google.com");
    Scanner scnr = new Scanner(url.openStream());
    String s = scnr.nextLine();
    System.out.println(s);
    scnr.close();
}
```