Notice The Trumpeter

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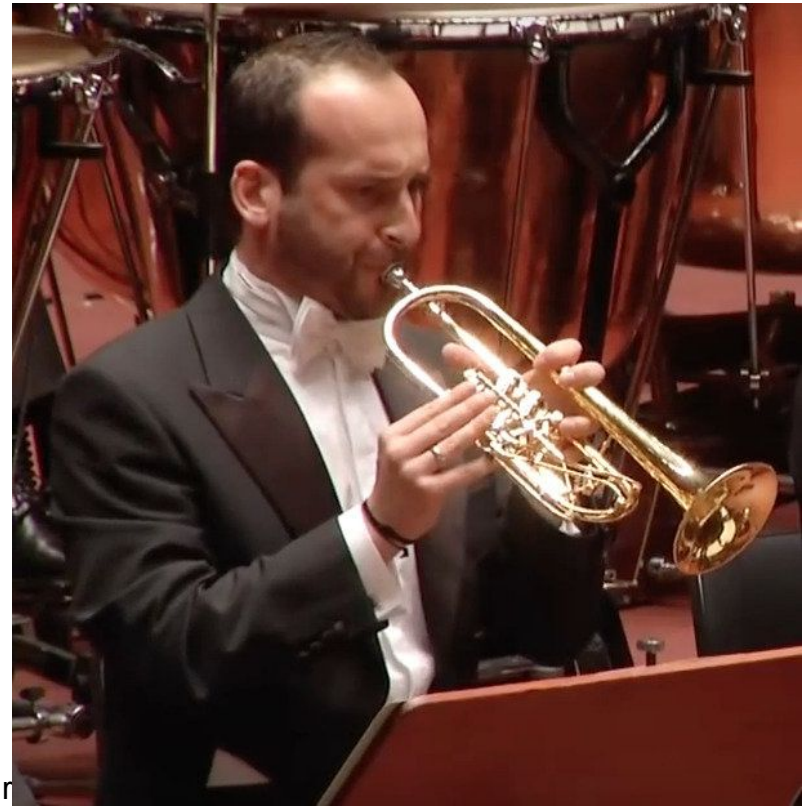
The Trumpeter



MAINTENANCE

MAINTENANCE

The Force We Must Listen To

Ran Regev

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SOFTWARE DEVELOPER
20+ YEARS

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ISO WG21, C++, ISRAEL NATIONAL BODY

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MAINTENANCE

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noun

1. the process of maintaining or preserving someone or something, or the state of being maintained.
   "crucial conditions for the maintenance of democratic government"

   Similar: preservation | conservation | continuation | continuance | continuity

2. the provision of financial support for a person's living expenses, or the support so provided

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QUALITY

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Readable

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```
int sum = std::accumulate(v.begin(), v.end(), 7);
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Unreadable

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int sum = 7;
for ( int i = 0; i < v.size(); ++ i )
{
    sum += i;
}
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QUALITY

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for ( int i = 0; i < v.size(); ++ i )
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```

QUALITY

Readable **Understandable** **Bright**

```
int sum = std::accumulate(v.begin(), v.end(), 7);
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Unreadable **Confusing** **Opaque**

```
int sum = 7;
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Unreadable **Confusing** **Opaque**

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QUALITY

Readable Understandable Bright Exposes Layers

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int sum = std::accumulate(v.begin(), v.end(), 7);
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```
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QUALITY

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int sum = std::accumulate(v.begin(), v.end(), f());
```

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```
int sum = 7;
for ( int i = 0; i < v.size(); ++ i )
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    sum += v[i];
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```

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QUALITY

Readable Understandable Bright Exposes Layers

```
int sum = std::accumulate(v.begin(), v.end(), f());
```

Unreadable Confusing Opaque Surface

```
int sum = f();
for ( int i = 0; i < v.size(); ++ i )
{
    sum += v[i];
}
```

QUALITY

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Snap!

```
int sum = std::accumulate(v.begin(), v.end(), f());
```

Unreadable Confusing Opaque Surface

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int sum = f();
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    sum += v[i];
}
```

QUALITY

Readable Understandable Bright Exposes Layers Snap!

```
int sum = std::accumulate(v.begin(), v.end(), f());
```

Unreadable Confusing Opaque Surface Heavy

```
int sum = f();
for ( int i = 0; i < v.size(); ++ i )
{
    sum += v[i];
}
```

DEVELOPMENT FORCES

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DEVELOPMENT FORCES

Time To Market

DEVELOPMENT FORCES

Time To Market

Performance

DEVELOPMENT FORCES

Time To Market

Performance

```
if ( pa )
{
    if ( pa->f() )
    {
        // more code
    }
}
```

DEVELOPMENT FORCES

Time To Market

Performance

```
if ( pa && pa->f() )
{
    // more code
}
```

DEVELOPMENT FORCES

Time To Market

Performance

```
memset()
vs.
std::fill()
```

DEVELOPMENT FORCES

Time To Market

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Correctness

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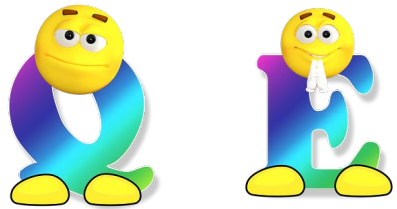

DEVELOPMENT FORCES

Time To Market

Performance

Correctness

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Correctness

Maintenance?

DEVELOPMENT FORCES

Time To Market

Performance

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Maintenance?

UNMAINTAINED OUTCOME

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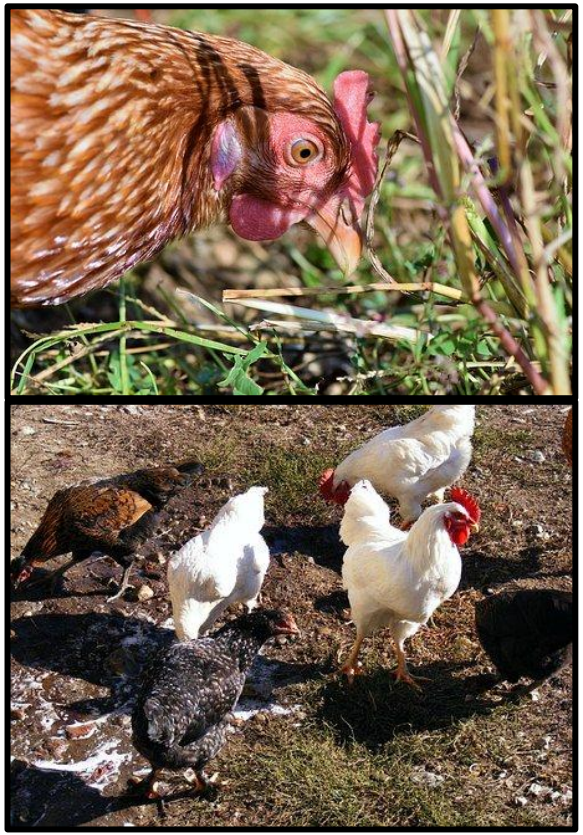

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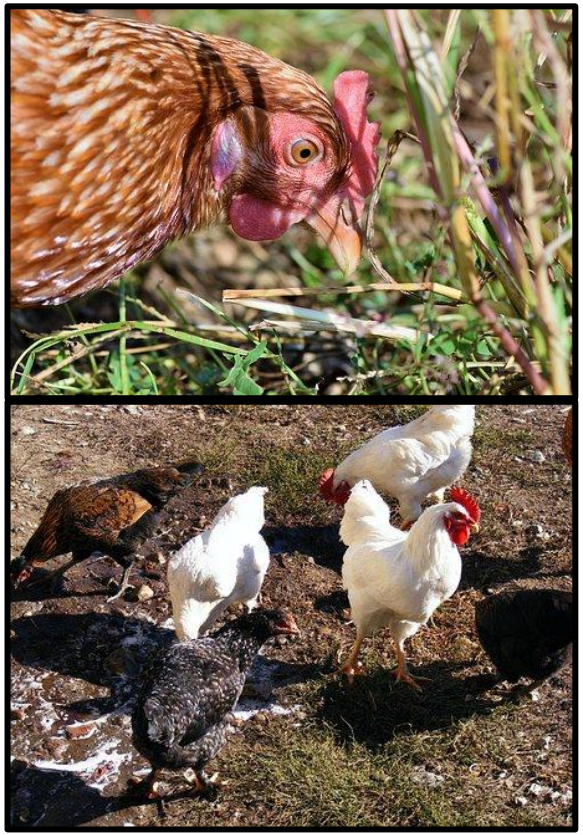
UNMAINTAINED OUTCOME

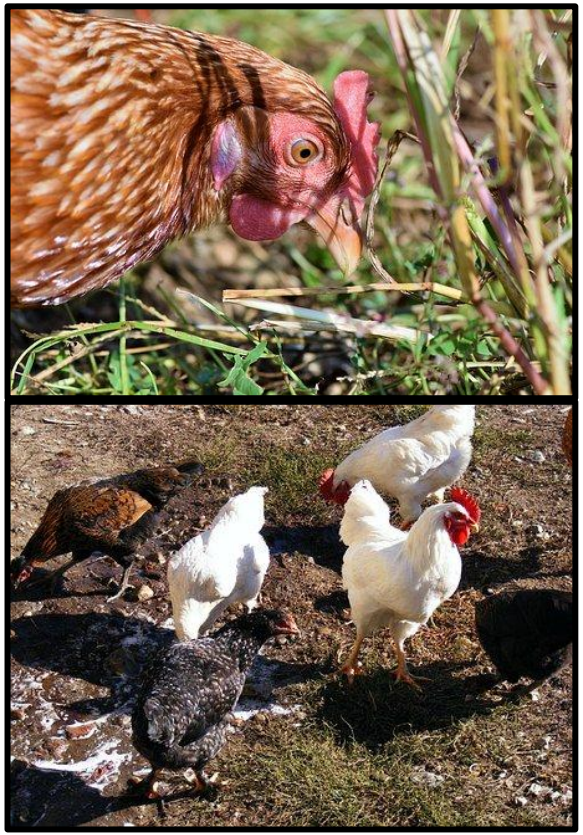
Long Development Times



UNMAINTAINED OUTCOME

Long Development Times

Huge Learning Curves

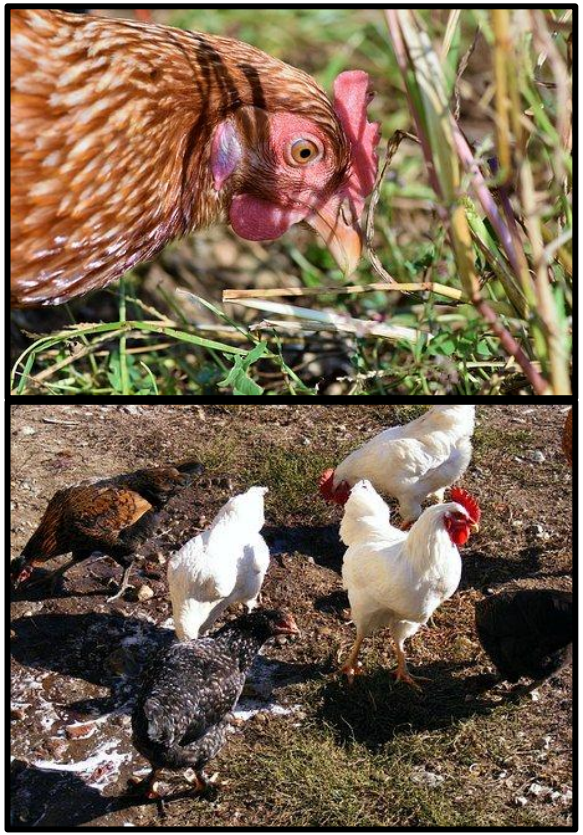


UNMAINTAINED OUTCOME

Long Development Times

Huge Learning Curves

Untouchable Areas



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UNMAINTAINED OUTCOME

Long Development Times

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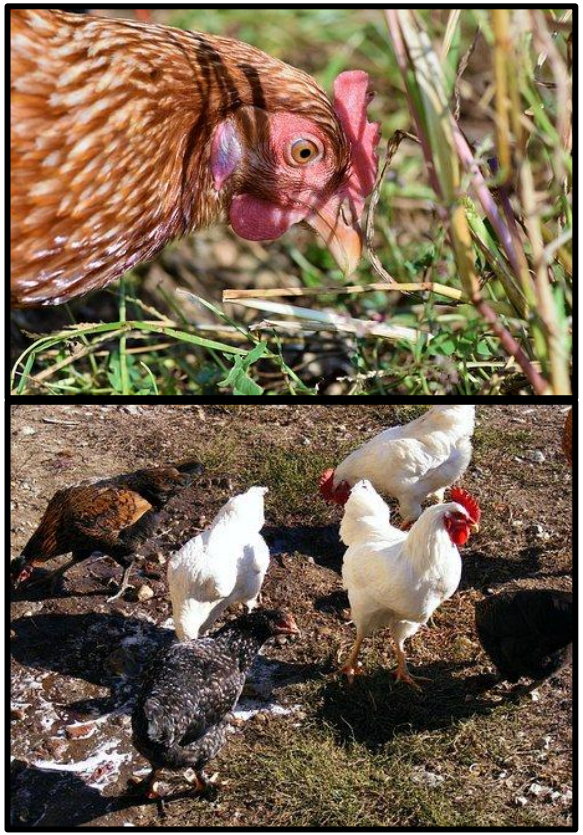
Untouchable Areas



UNMAINTAINED OUTCOME

UNMAINTAINED OUTCOME

Frustration

UNMAINTAINED OUTCOME

Frustration

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Frustration

TRE17

UNMAINTAINED OUTCOME

Frustration

TRE17

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Frustration

Slow Entrance

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Long Breaks

Disruptions

TRE17

UNMAINTAINED OUTCOME

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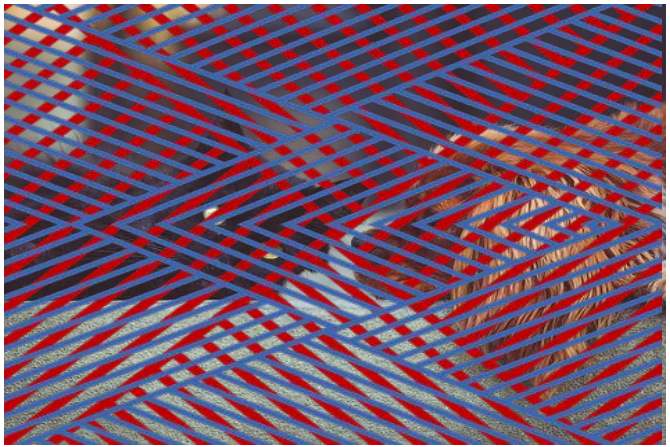

TRE17

UNMAINTAINED OUTCOME

Frustration

Slow Entrance

Long Breaks

Disruptions

TRE17

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IMPACT

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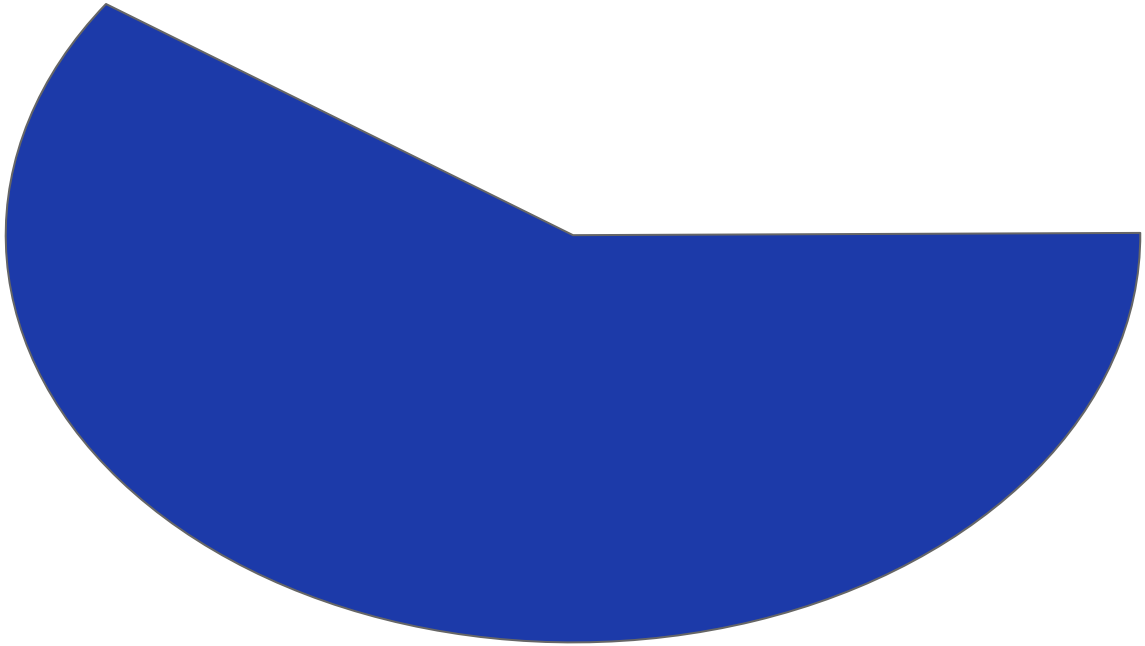

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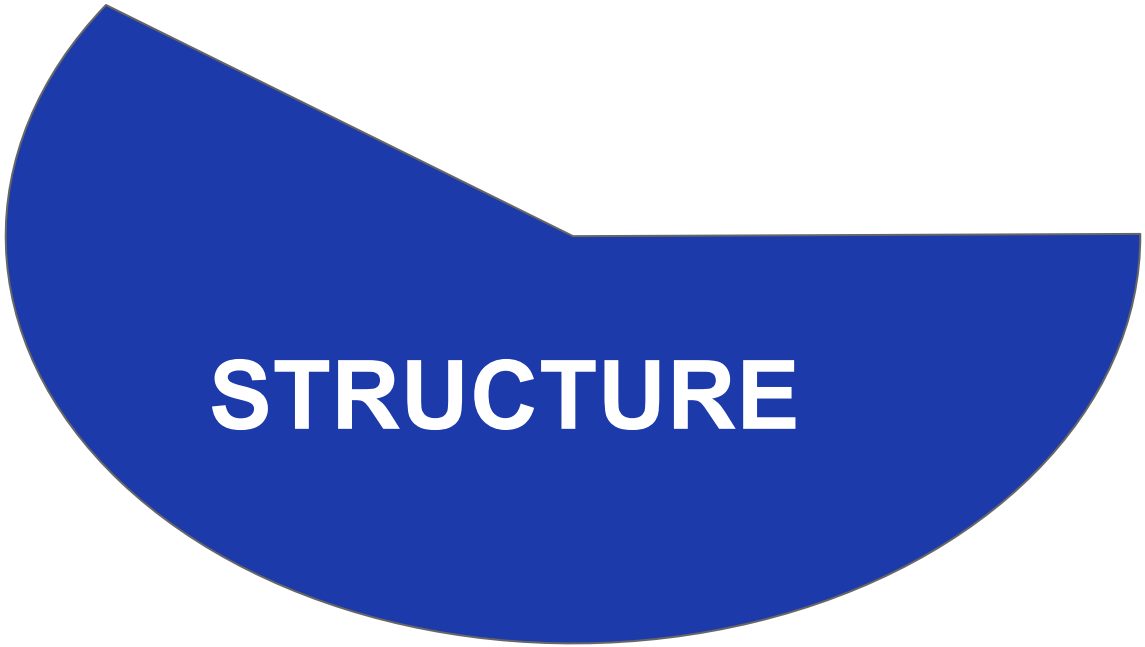

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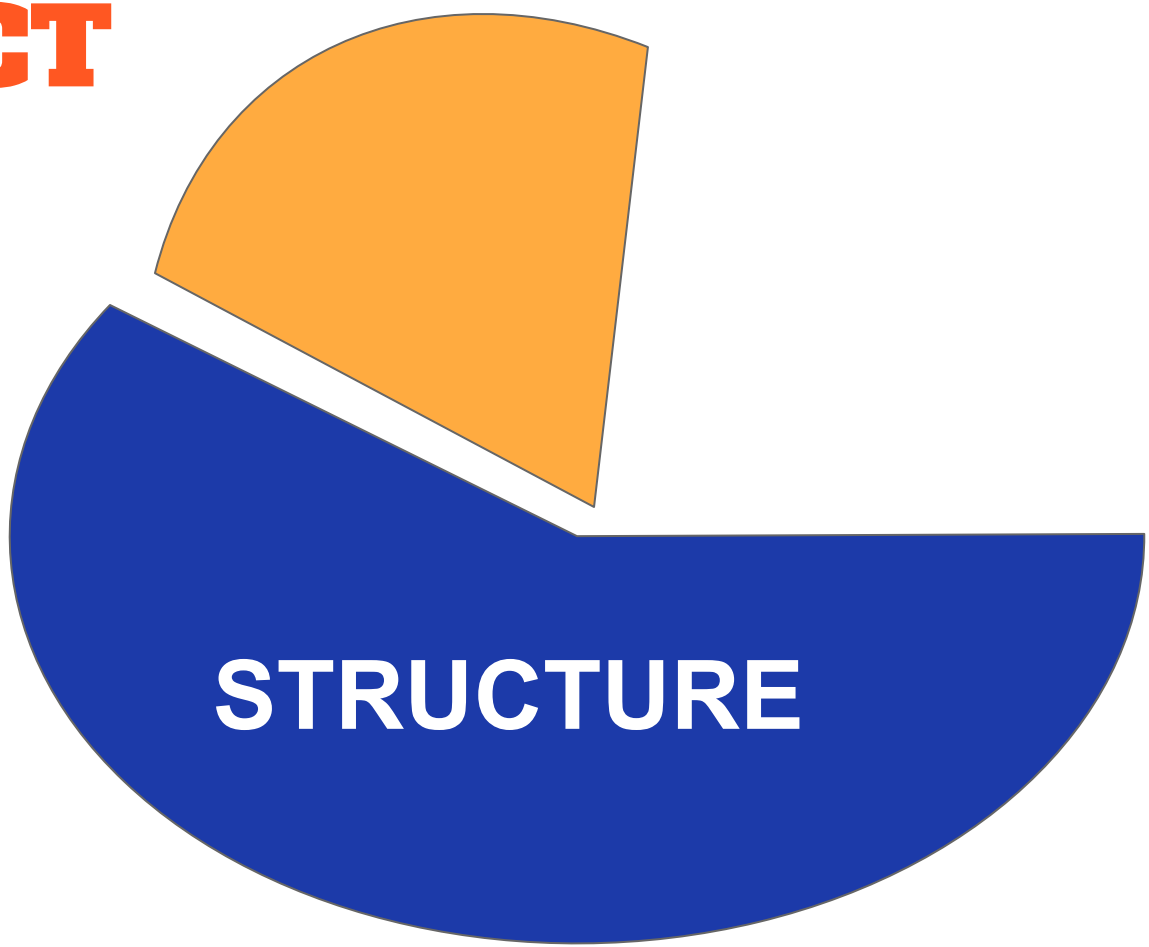

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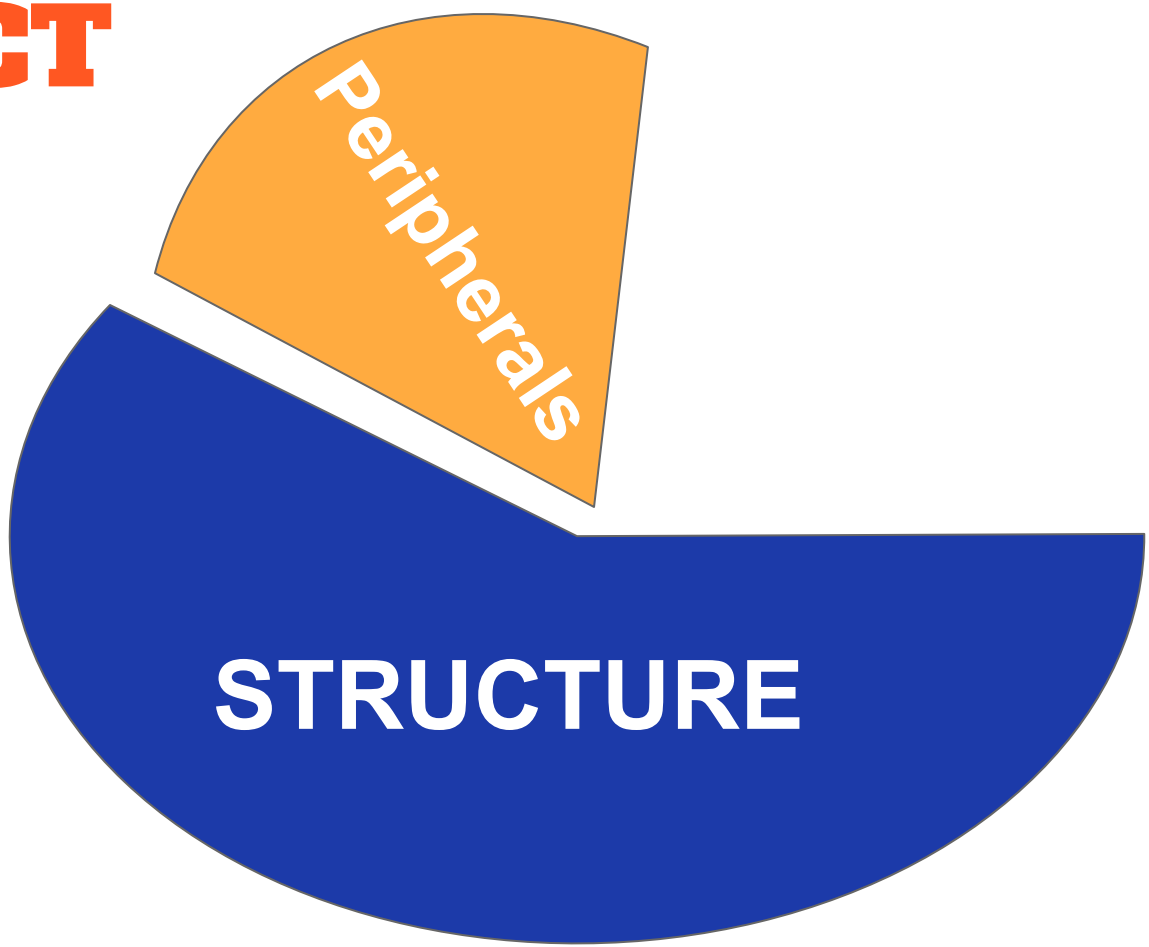

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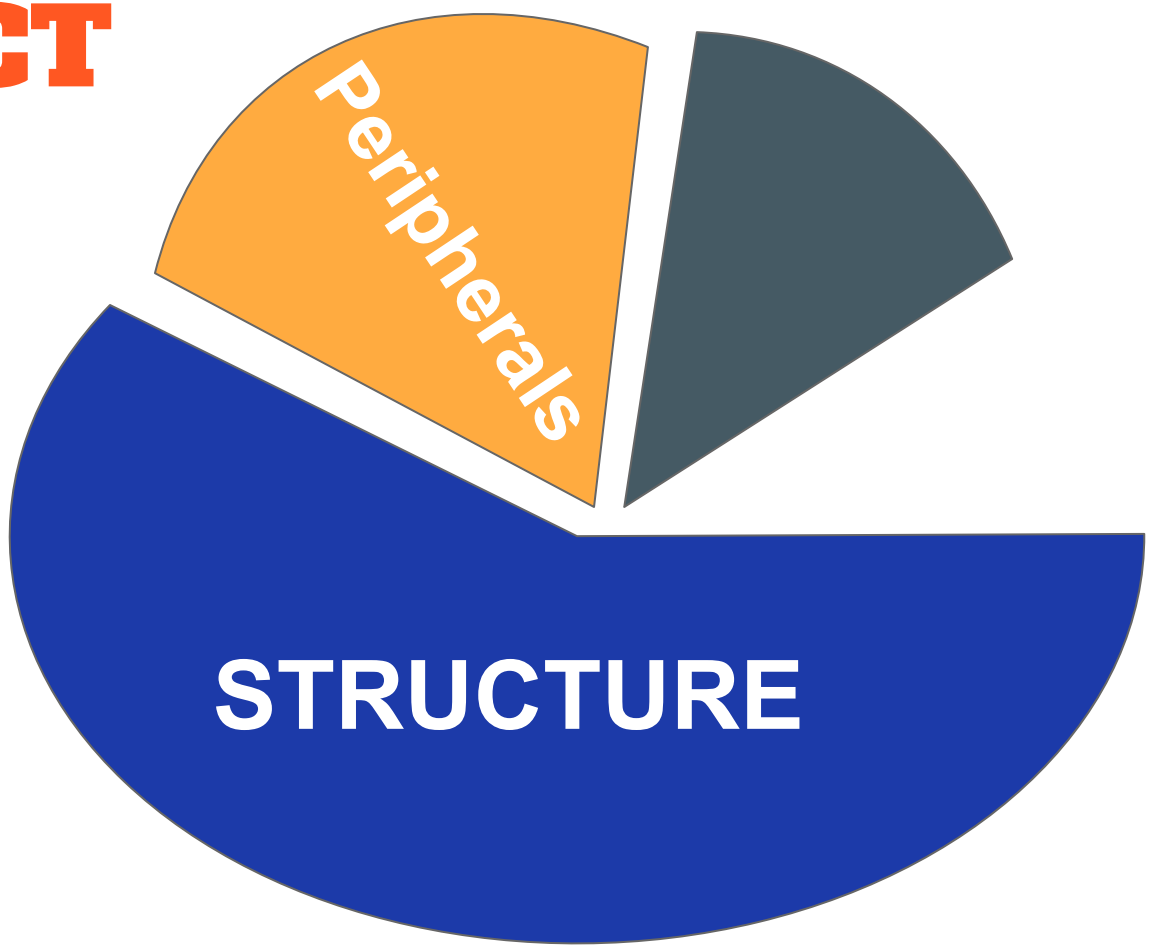

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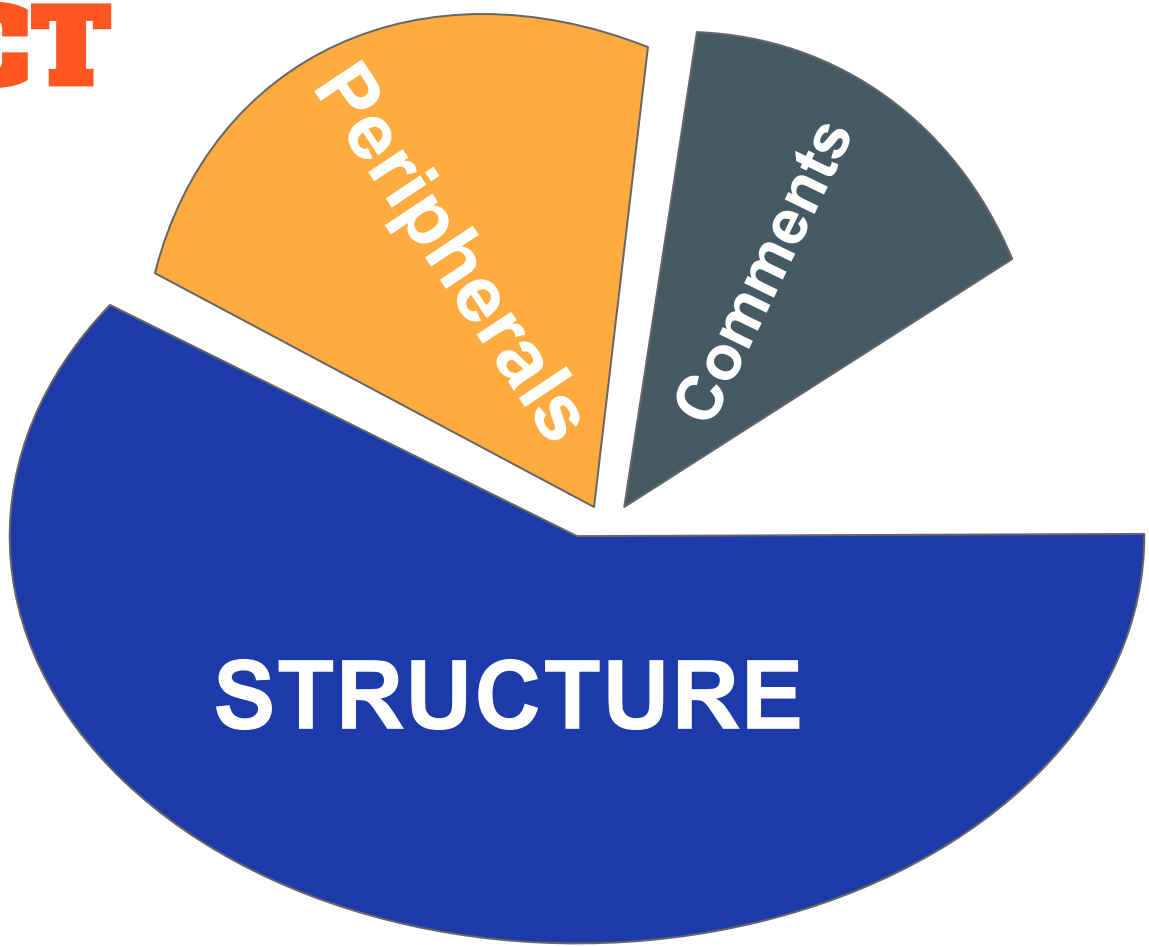

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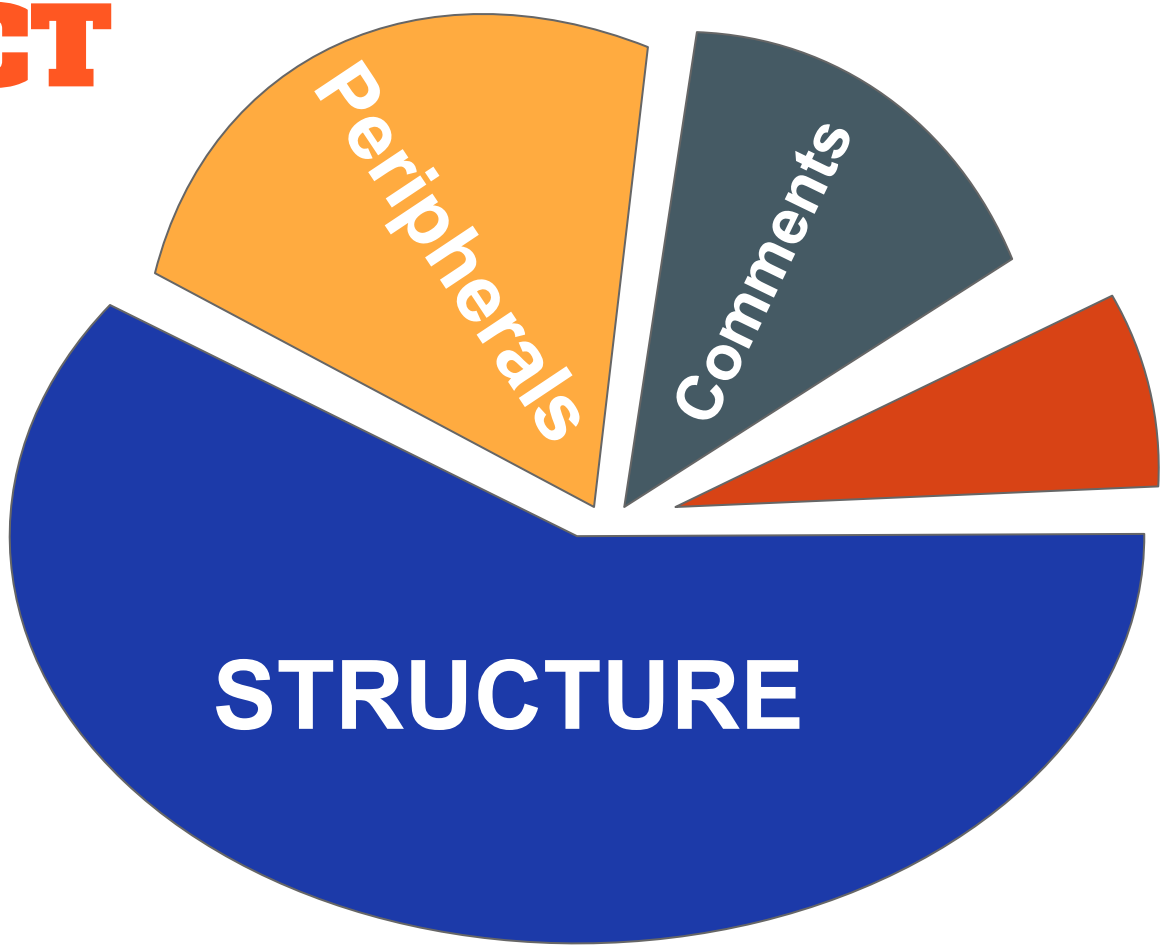

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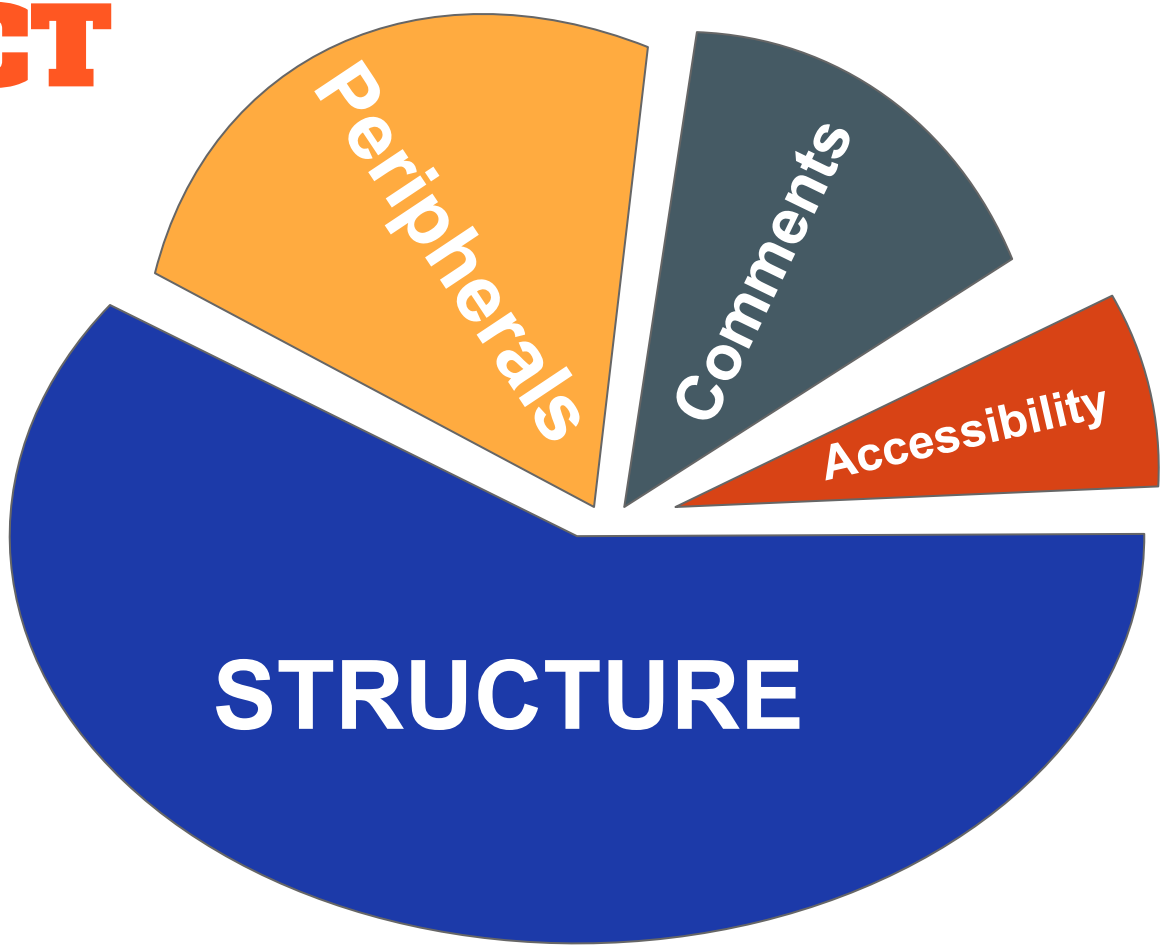

STRUCTURE

STRUCTURE

A

STRUCTURE

A B

STRUCTURE

A B C

STRUCTURE

A

B

C

STRUCTURE

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STRUCTURE

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STRUCTURE

```
using namespace vacation;
```

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```
using namespace vacation;
using namespace amazing;
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STRUCTURE

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Meetings

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STRUCTURE

Source Control

Meetings

STRUCTURE

Meetings

Source Control

STRUCTURE

Meetings

Source Control

File System

STRUCTURE

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Meetings

File System

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STRUCTURE

Source Control

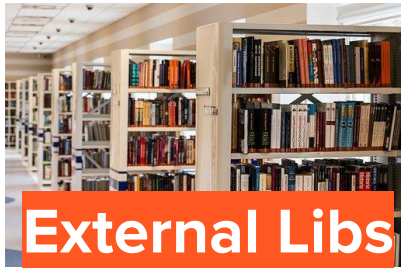
Meetings

File System

Maintained?

STRUCTURE File System Example

STRUCTURE File System Example



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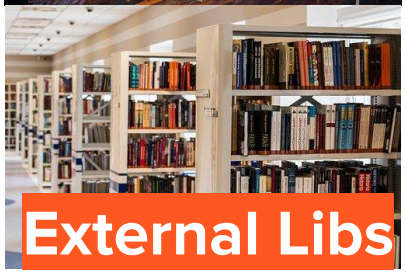

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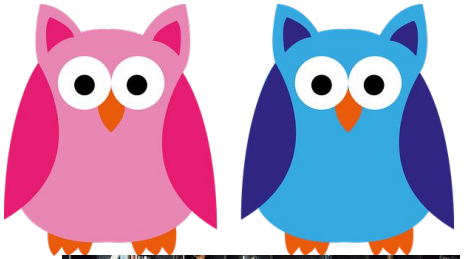

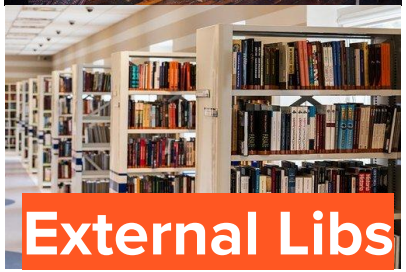

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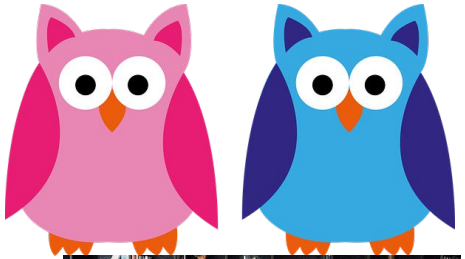

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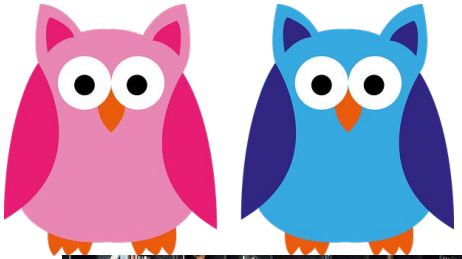

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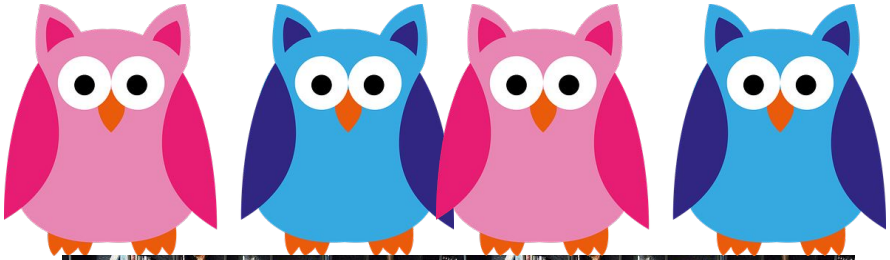
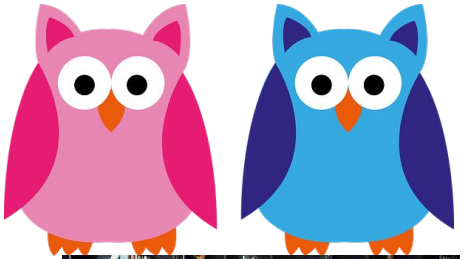
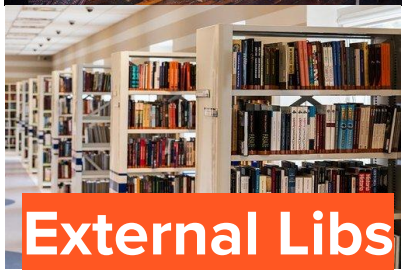
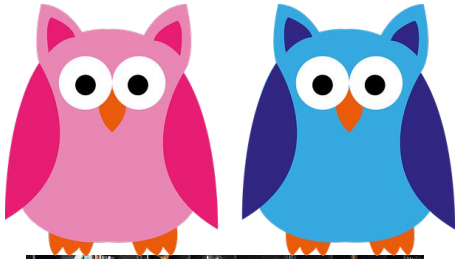


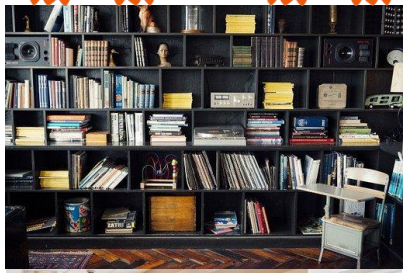
STRUCTURE

File System Example









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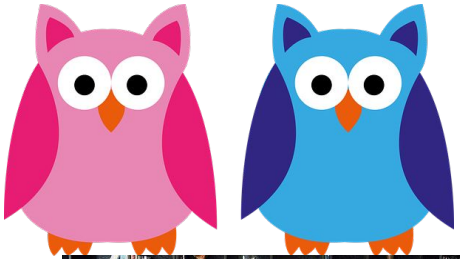

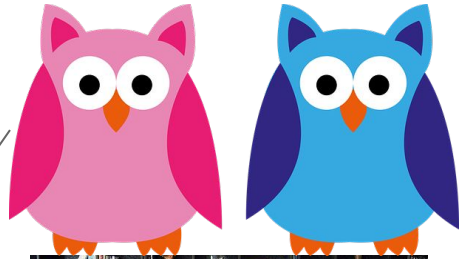

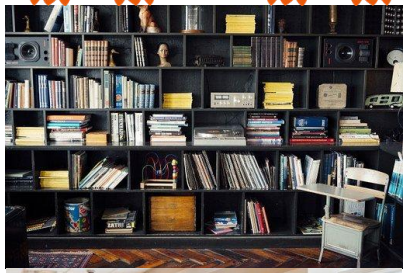

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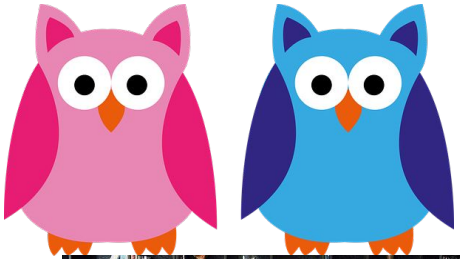
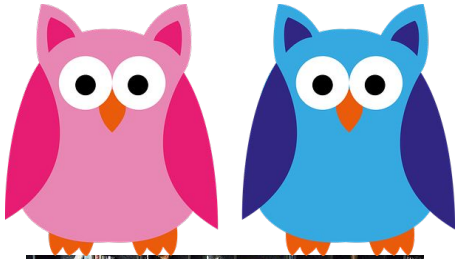
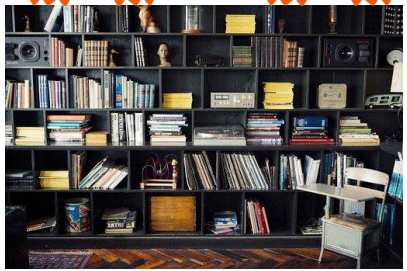
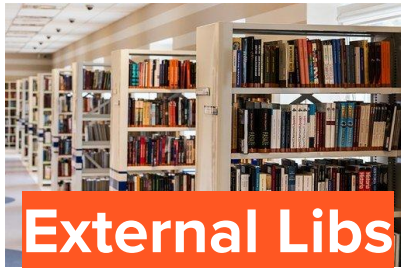
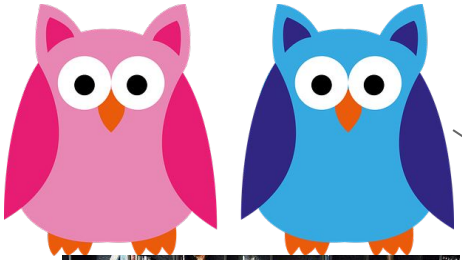


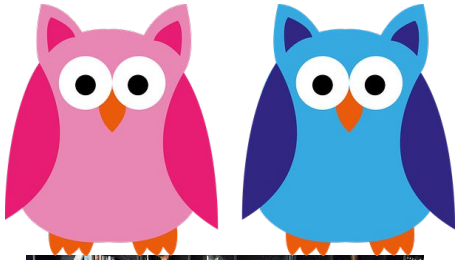


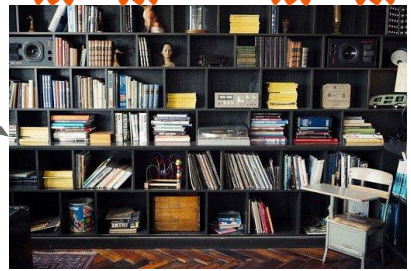


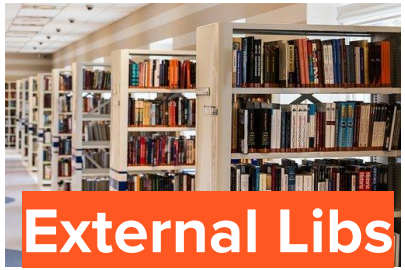


STRUCTURE File System Example









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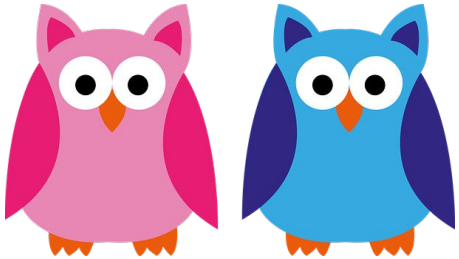

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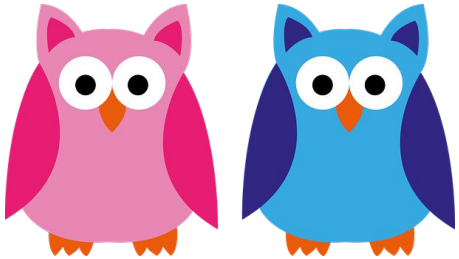

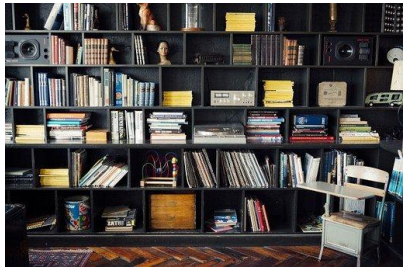

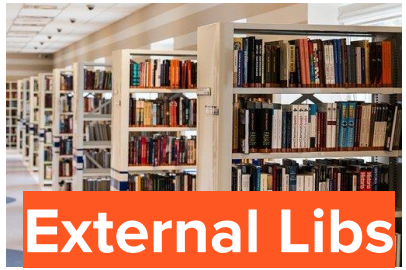

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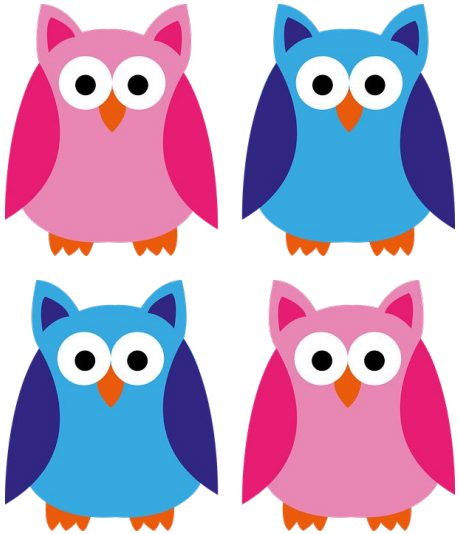

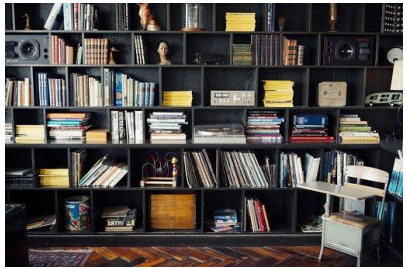

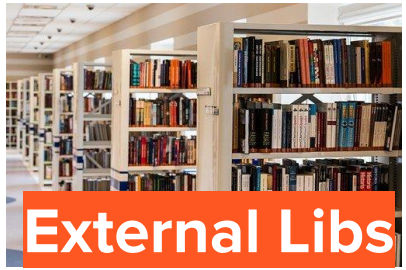

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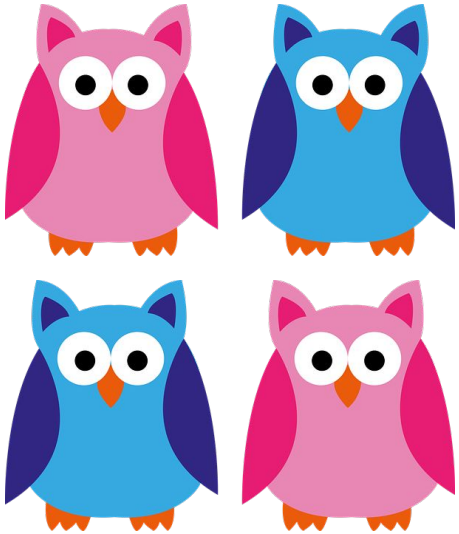

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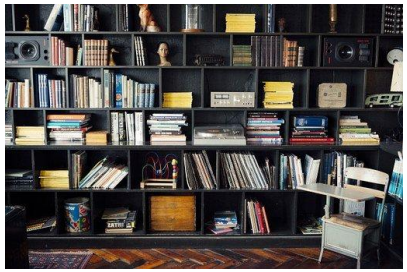

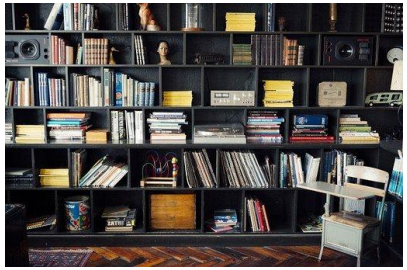

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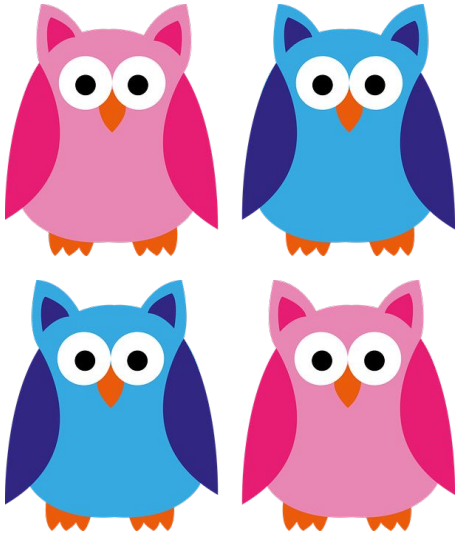

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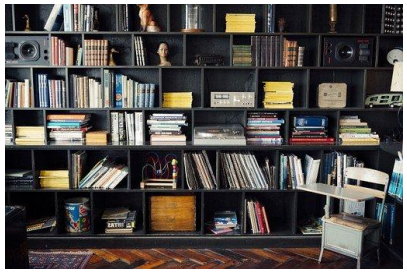

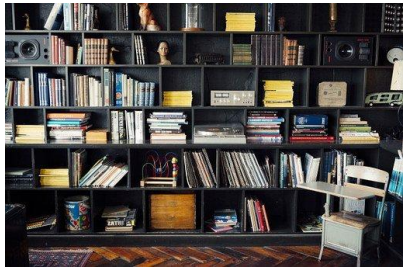

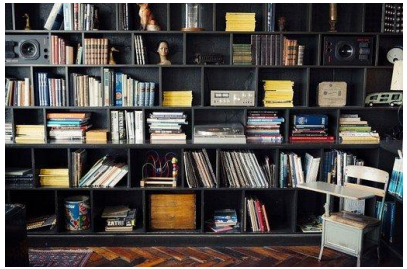

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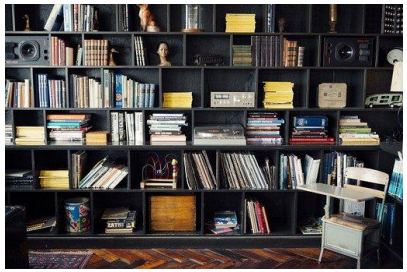

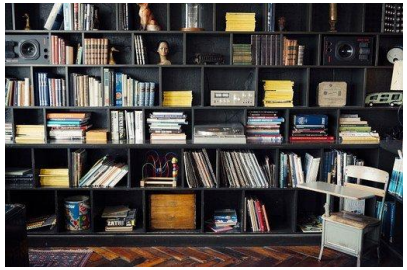

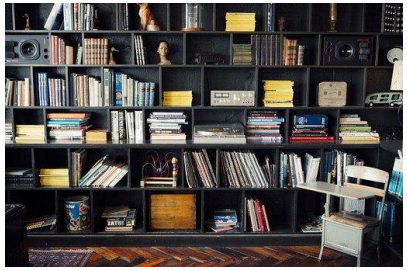

Peripherals

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Documents

The MainClass class

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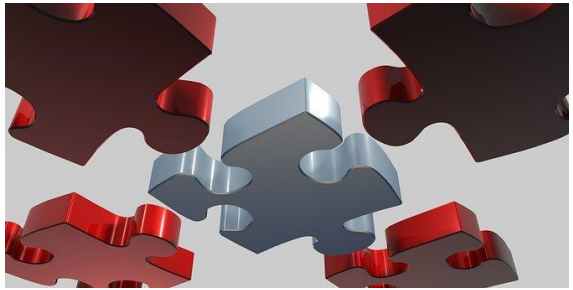

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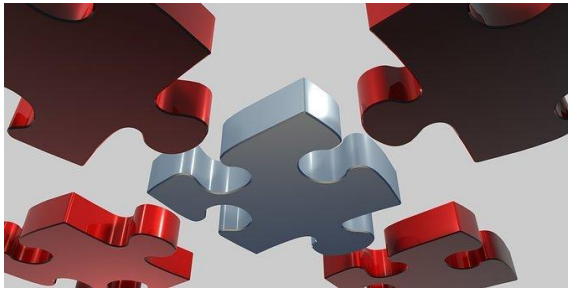

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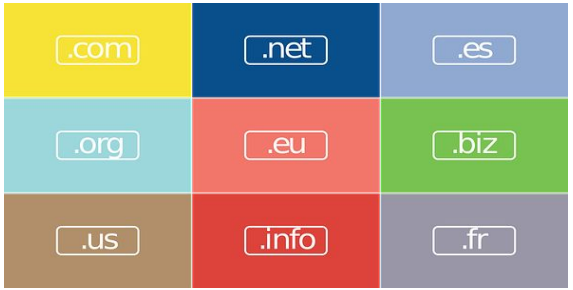

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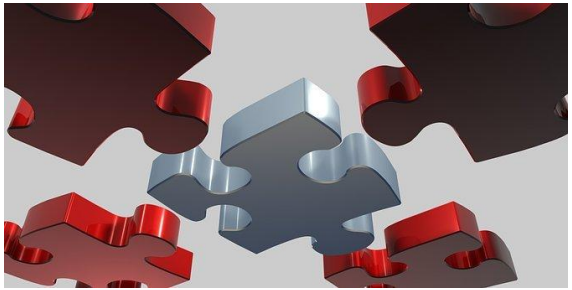

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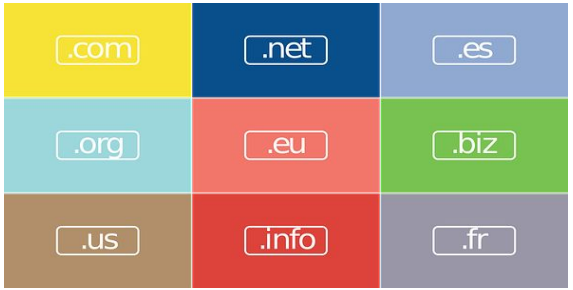

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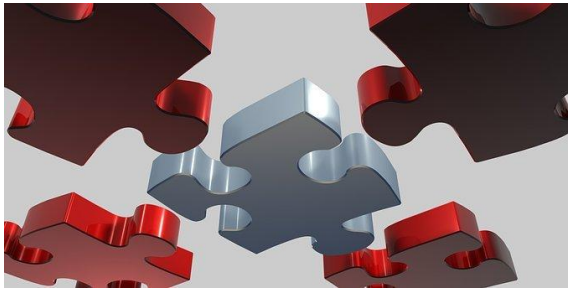

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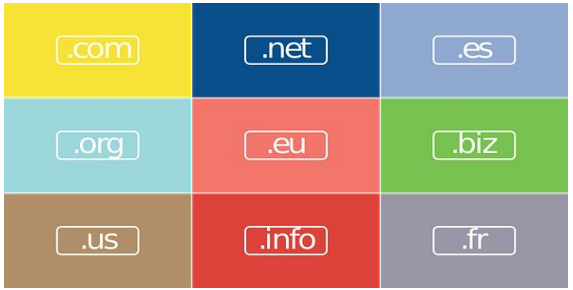

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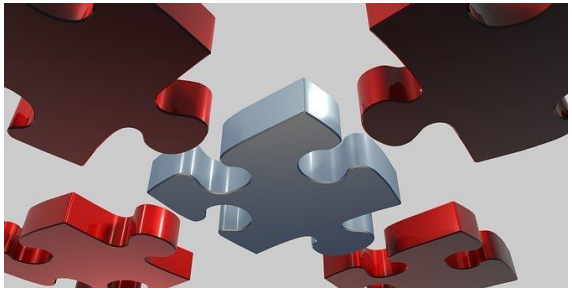

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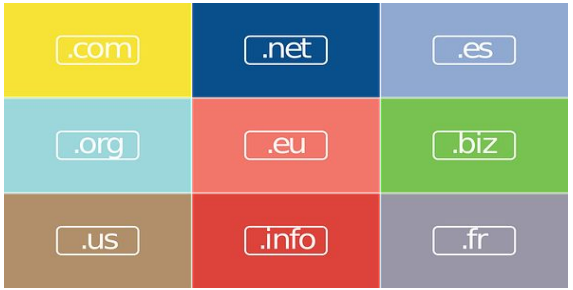

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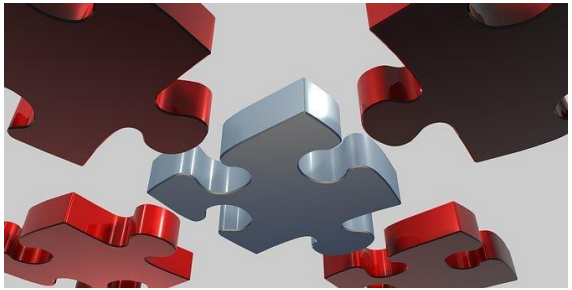

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Maintained?

Peripherals

Peripherals

Code/Task

Peripherals TODO Code/Task

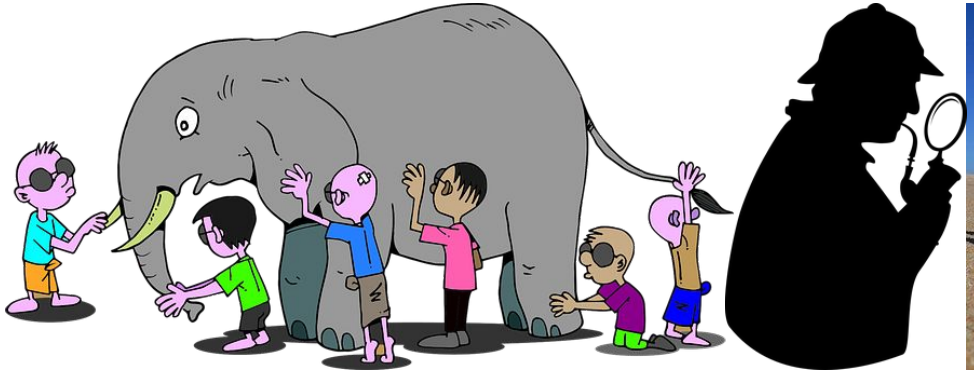
Peripherals TODO Code/Task

Findings

Peripherals TODO Code/Task

Clues Findings

Peripherals TODO Code/Task



Assumptions Clues Findings

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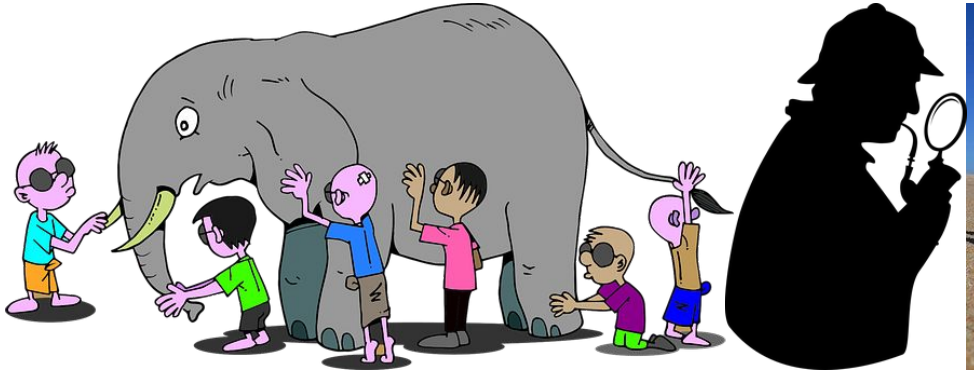
Peripherals TODO Code/Task



Conclusions Assumptions Clues Findings

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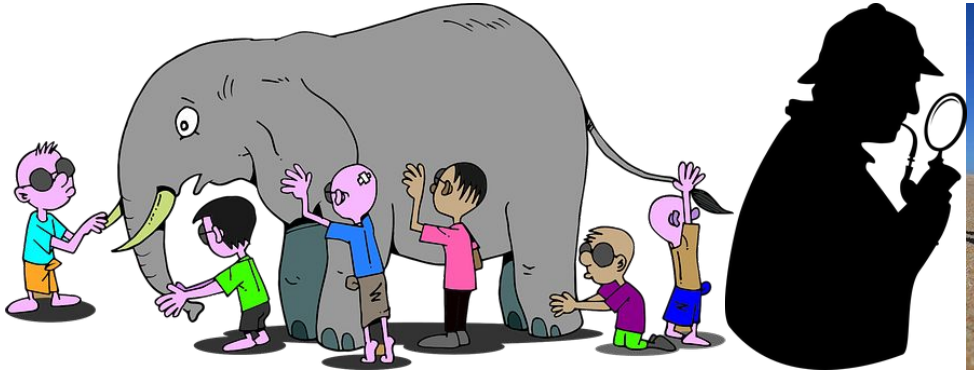

Conclusions Assumptions Clues Findings

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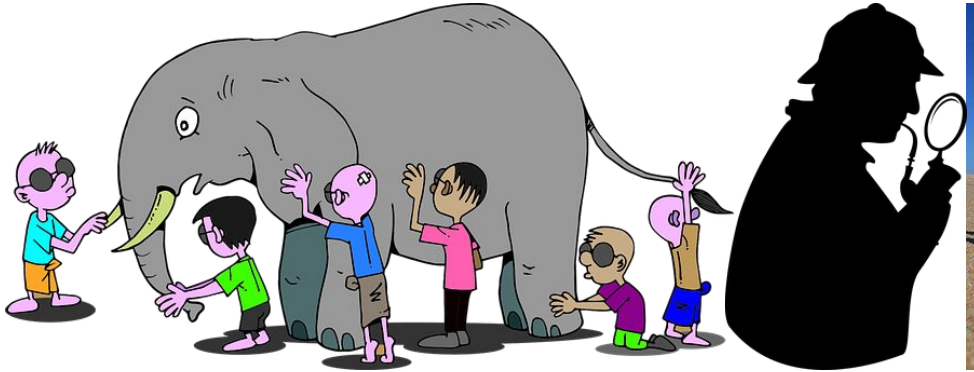
Peripherals TODO Code/Task



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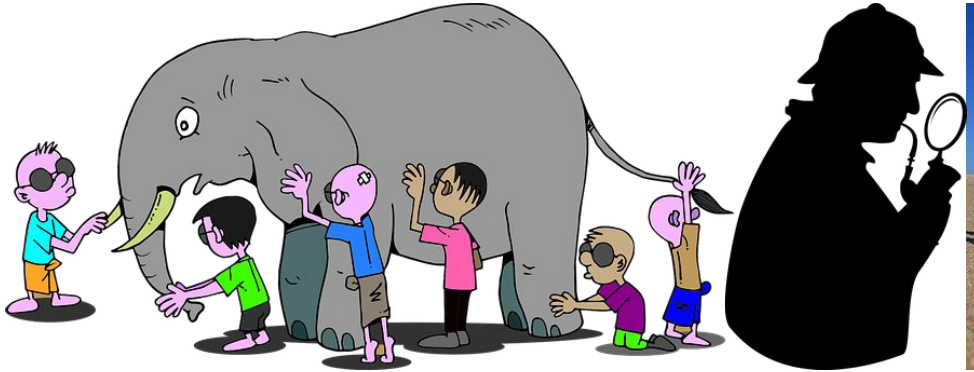

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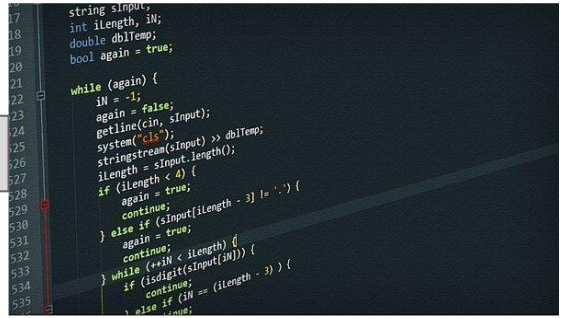

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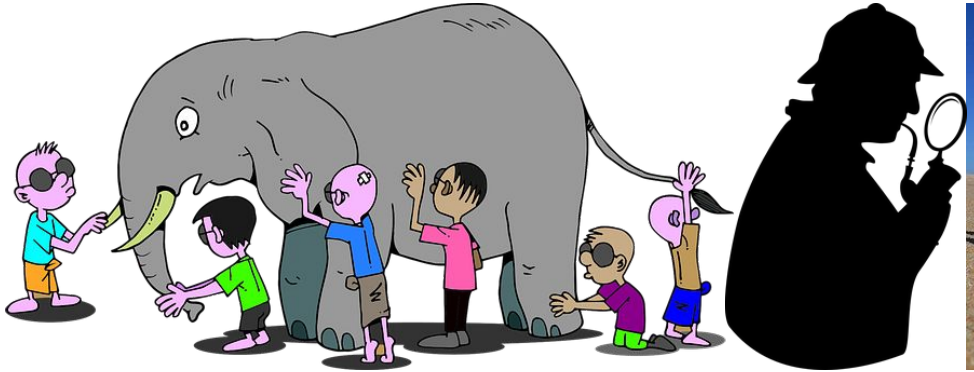

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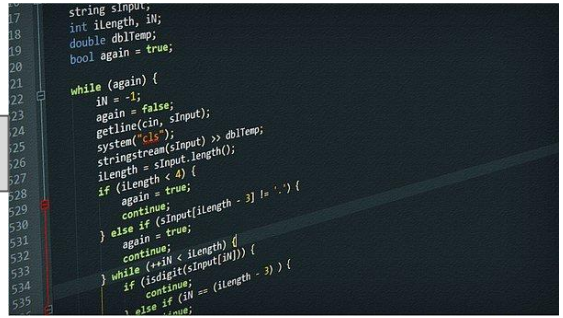

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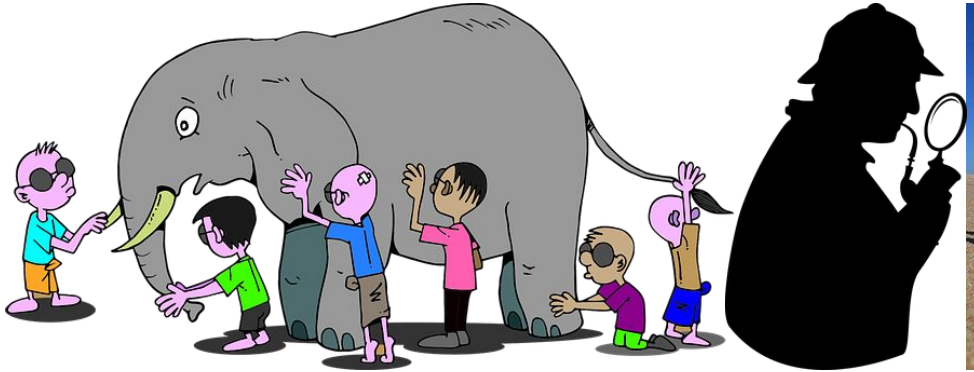

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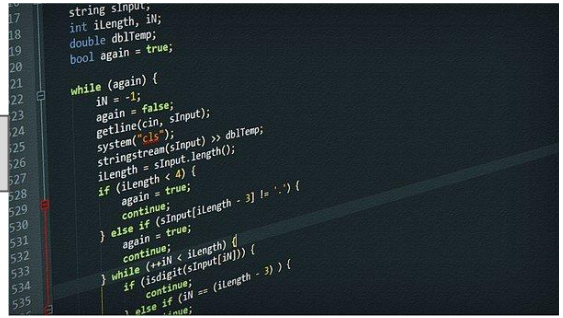

Peripherals TODO Code/Task

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Peripherals TODO Code/Task

Code

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Peripherals TODO Code/Task

External Tool

Code

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Peripherals TODO Code/Task

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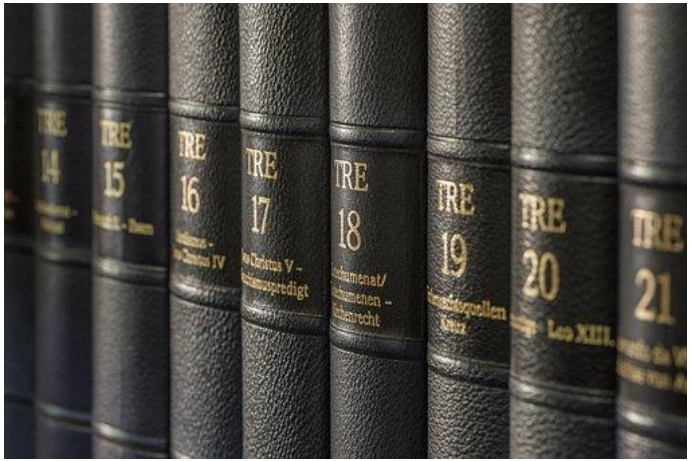

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Peripherals TODO Code/Task

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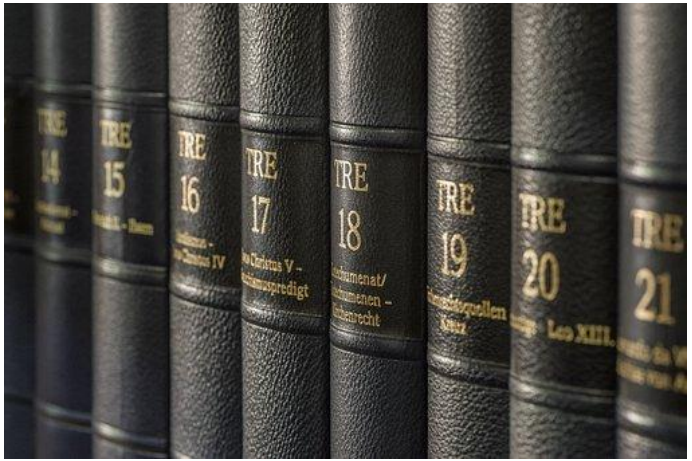

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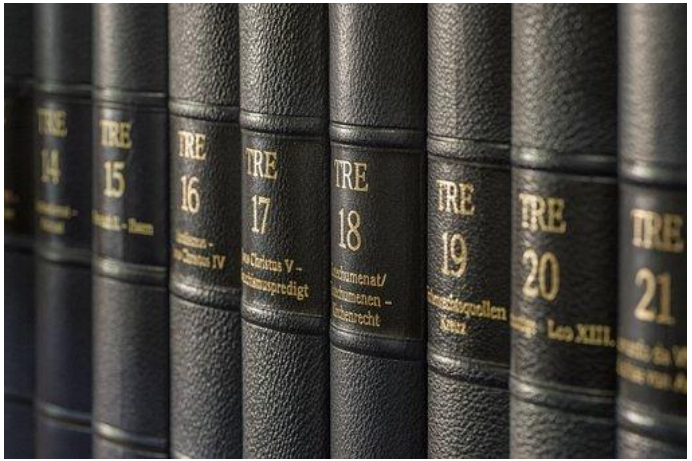
Ran Regev @regev_ran regev.ran@gmail.com

Peripherals TODO Code/Task

External Tool



Code

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Peripherals TODO Code/Task

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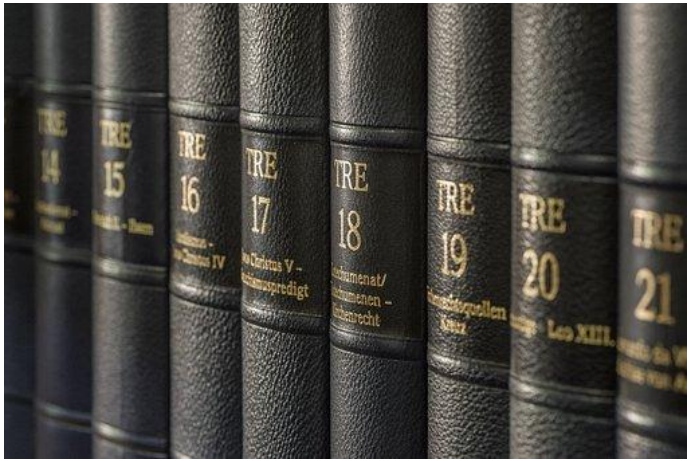

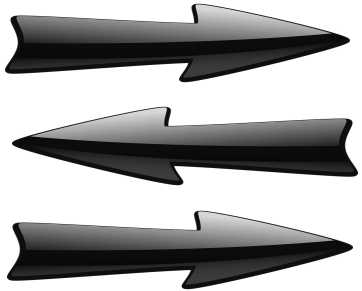

Code

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Peripherals TODO Code/Task

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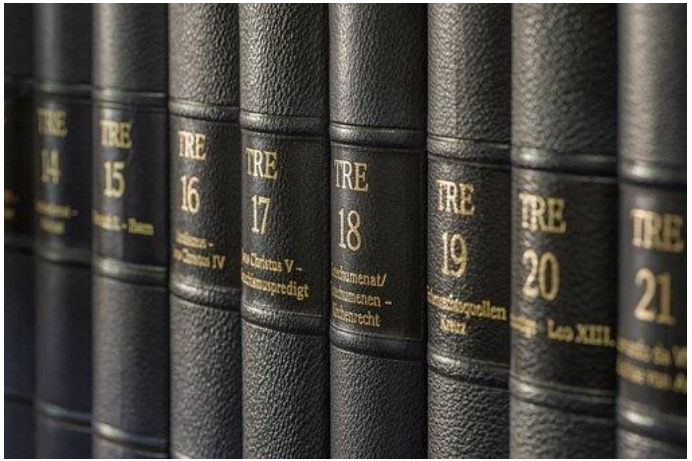

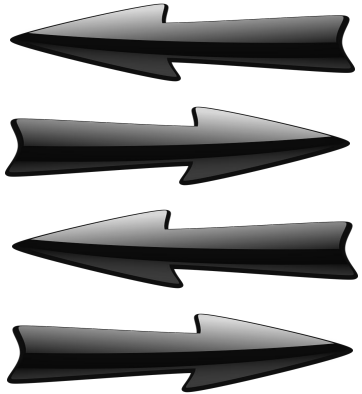

Code

```
string sInput;
int iLength, iN;
double dblTemp;
bool again = true;

while (again) {
    iN = -1;
    again = false;
    getline(cin, sInput);
    system("cls");
    stringstream(sInput) >> dblTemp;
    iLength = sInput.length();
    if (iLength < 4) {
        again = true;
        continue;
    } else if (sInput[iLength - 3] != '.') {
        again = true;
        continue;
    } while (++iN < iLength) {
        if (isdigit(sInput[iN])) {
            continue;
        } else if (iN == (iLength - 3) ) {
```

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Peripherals TODO Code/Task

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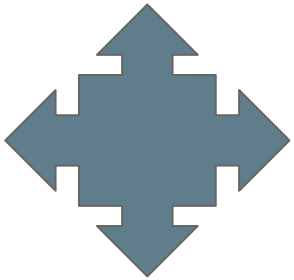
Peripherals TODO Code/Task



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Peripherals TODO Code/Task

TRE-17 - the dashboard shows only 12H AM/PM format. Probably because of ahhhhh

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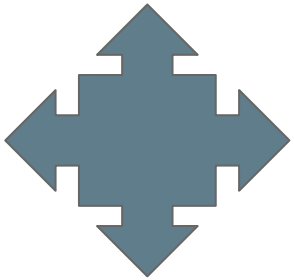
Peripherals TODO Code/Task



TRE-17 – dashboard shows only 12H AM/PM format. Probably because of ahhhhh

External

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Peripherals TODO Code/Task

```
#> git br -r
origin/MBL-22
origin/MBL-32-qa-1
origin/OFC-41
origin/OFC-44
origin/TRE-15
origin/TRE-17
```

External

TRE-17 – dashboard shows only 12H AM/PM format. Probably because of ahhhhh

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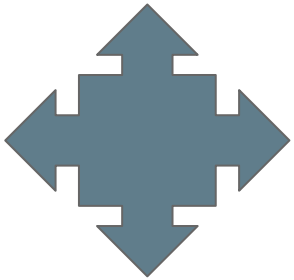
Peripherals TODO Code/Task

Branches

```
#> git br -r
origin/MBL
origin/M    2-qa-1
origin      -41
origi       C-44
ori        TRE-15
ori        n/TRE-17
```



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Peripherals TODO Code/Task

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ori        TRE-15
ori       n/TRE-17
```

External

TRE-17 – dashboard shows only 12H AM/PM format. Probably because of ahhhhh

```
#> git log -3 --oneline
OFC-41 # events grid and bar - switched between 'Ok' and 'Cancel' buttons
TRE-17 # changed to 24 hour format in dashboard
MBL-22 # changed error messages in 'change password' screen
```

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Peripherals TODO Code/Task

```
#> git br -r
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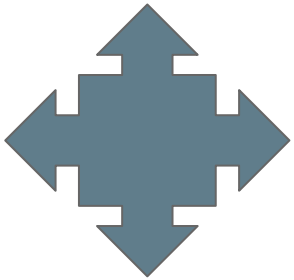
Branches



```
// TRE-17 explains this strange code:
/* ... */
```

External

TRE-17 - dashboard shows only 12H AM/PM format. Probably because of ahhhhh

```
#> git log -3 --   line
OFC-41 # event id and bar - switched between 'Ok' and 'Cancel' buttons
TRE-17 # cha    to 24 hour format in dashboard
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```

Commits

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Peripherals TODO Code/Task

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origin  -41
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Code

TRE-17 –   dashboard shows only 12H AM/PM   mat. Probably because of ahhhhh

External

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#> git log -3 --   ine
OFC-41 # event   id and bar - switched between 'Ok' and 'Cancel' buttons
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Commits

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Comments

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Comments

What/Why

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Comments

What

What/Why

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Comments

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Comments

What/Why

What


```
// check if total is zero
if ( 0 == total )
```

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Comments

What/Why

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// check if total is zero
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Why

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Why

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Comments

What/Why

What


```
// check if total is zero
if ( 0 == total )
```

Why


```
// when the total stayed zero, we
// must take a special action
// (see MBL-22 for more details)
if ( 0 == total )
```

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Comments

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Comments

Share

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Comments

Share

```
// need to commit received offset + 1 !!!
kafka::commit( _offset + 1 );
```

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Comments

Share

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Investigation

Ran Regev @regev_ran regev.ran@gmail.com

Comments

Share

```
// need to commit received offset + 1 !!!
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Investigation

Confusion

Ran Regev @regev_ran regev.ran@gmail.com

Comments

Share

```
// need to commit received offset + 1 !!!
kafka::commit( _offset + 1 );
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Investigation

Confusion

Share!

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Comments

Ran Regev @regev_ran regev.ran@gmail.com

Comments

Story

Ran Regev @regev_ran regev.ran@gmail.com

Comments

Story

```
// creates a copy of the element in the queue.
// this allows unlocking the queue before handling the element.
// handleQueueElement gets a reference to this local t.
// the queue itself may be moved.
T t = std::move( _queue.front() );
_queue.pop();
_queueLock.unlock();
_handler.handleQueueElement( t );
```

Ran Regev @regev_ran regev.ran@gmail.com

Comments

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Comments

Story

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Comments

Story

```
// a note about the period -
// in each cycle we do the operation and _only then_ start the
// countdown to the end of period.
// therefore the time between operations is period-time + operation time.
// it is fine if the operation is short and the period is long.
// it might be odd with short period and long operation.
// e.g. #1: period = 1 second. operation takes 5 milli:
// the time between the _start_ of one operation and its successive would be:
// 1.005 seconds.
// e.g. #1: period = 10 milli. operation takes 15 milli:
// the time between the _start_ of one operation and its successive would be:
// 25 milli. which is *not* what we were asking for (as asked for 10).
// but what are the options? interleaving operations?
// forcing the operation object to be re-entered?
```

Ran Regev @regev_ran regev.ran@gmail.com

Comments

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Comments

Maintained?

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Comments

Maintained?

```
std::shared_ptr<ByteBuffer> DataBufferPool::GetDataBuffer()
{
    std::shared_ptr<ByteBuffer> DataBuffer;
    // [Dubin]: we found out the timeout slow the system too much.
    // when data buffer pool is full. Therefore, We don't user retries.
    DataBuffer = data_buffers_pool_->acquire();
    if ( DataBuffer == nullptr )
    {
        dropped_data_buffers_++;
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Comments

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This comment is no more

Ran Regev @regev_ran regev.ran@gmail.com

Comments

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}
```

It has ceased to be!

Ran Regev @regev_ran regev.ran@gmail.com

Comments

Maintained?

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It Expired!

Ran Regev @regev_ran regev.ran@gmail.com

Comments

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Bereft of life!

Ran Regev @regev_ran regev.ran@gmail.com

Comments

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Rests in peace!

Ran Regev @regev_ran regev.ran@gmail.com

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```

It is off the twig!

Ran Regev @regev_ran regev.ran@gmail.com

Comments

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```

It shuffled off its mortal coil

Ran Regev @regev_ran regev.ran@gmail.com

Comments

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```

THIS IS AN EX COMMENT !

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Accessibility

Ran Regev @regev_ran regev.ran@gmail.com

Accessibility

```
using intset = std::set<int>;
using intvec = std::vector<int>;

bool f( intset& exists, intset& newset  )
{
    bool changed=false;
    bool added=false;
    int newSize = newset.size();
    int existsSize = exists.size();
    intvec toRemove;

    if ( newSize <= existsSize ) {
        changed = getChanged( exists, newset, toRemove ); }
    else {
        changed = getChanged( exists, newset, toRemove );
        added=true; }

    if ( changed ) {
        // do staff with toRemove
        return true; }
    else if ( added ) {
        // do staff with newset
        return false; }
    else {
        return false; }
}
```

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using intset = std::set<int>;
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bool f( intset& exists, intset& newset  )
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    if ( changed ) {
        // do staff with toRemove
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        // do staff with newset
        return false; }
    else {
        return false; }
}
```
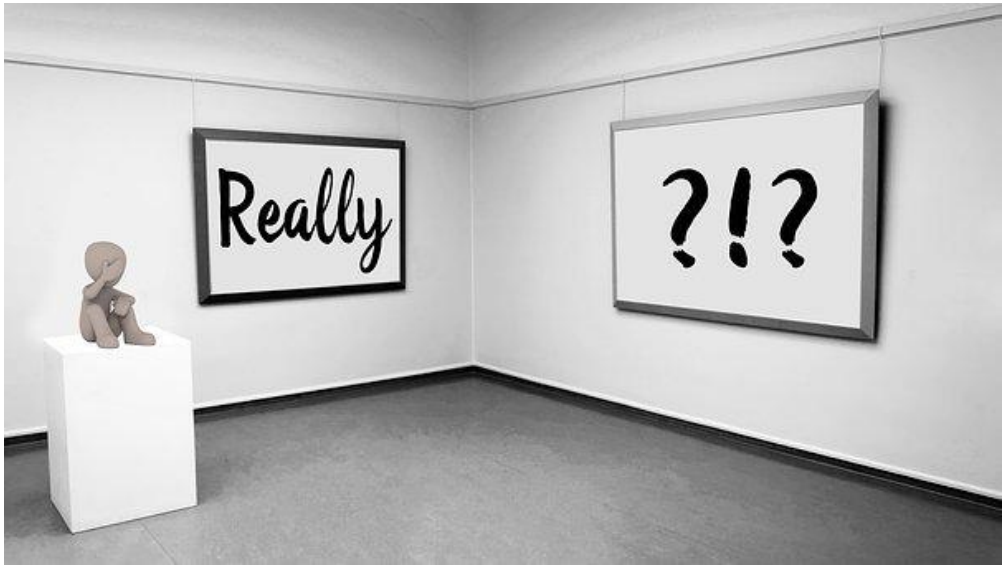
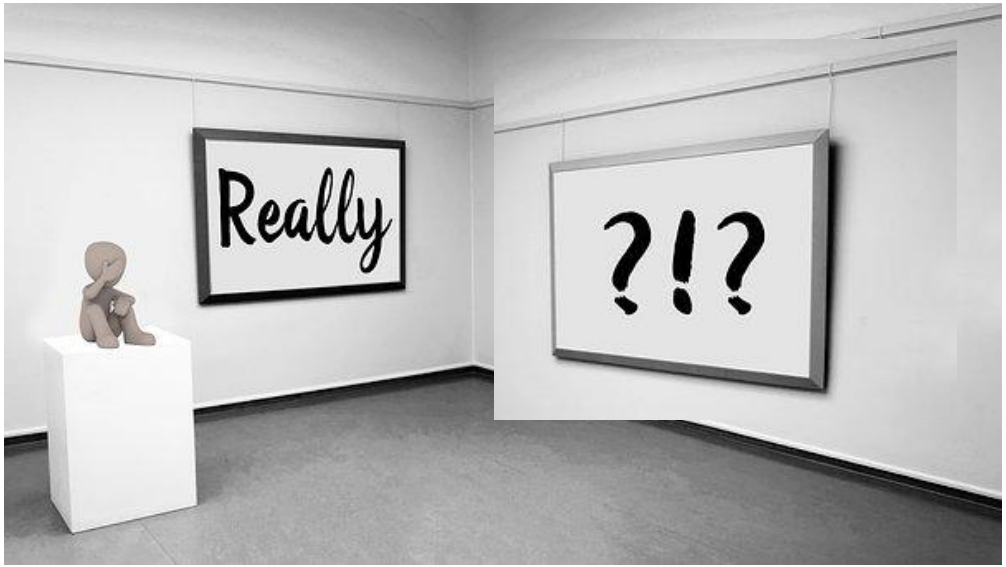



Ran Regev @regev_ran regev.ran@gmail.com

Accessibility

```cpp
using intset = std::set<int>;
using intvec = std::vector<int>;

bool f( intset& exists, intset& newset  )
{
    bool changed=false;
    bool added=false;
    int newSize = newset.size();
    int existsSize = exists.size();
    intvec toRemove;

    if ( newSize <= existsSize ) {
        changed = getChanged( exists, newset, toRemove ); }
    else {
        changed = getChanged( exists, newset, toRemove );
        added=true; }

    if ( changed ) {
        // do staff with toRemove
        return true; }
    else if ( added ) {
        // do staff with newset
        return false; }
    else {
        return false; }
}
```



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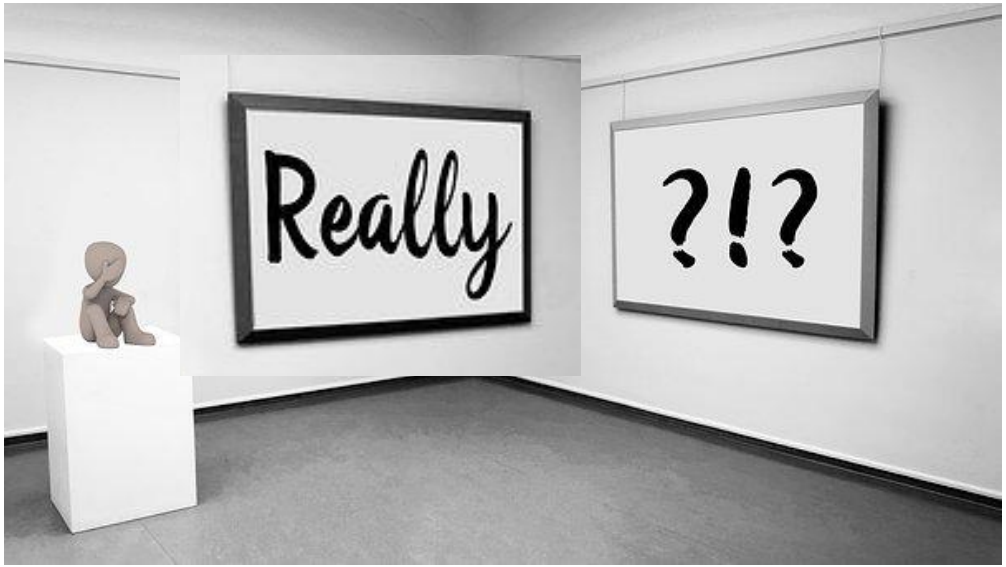

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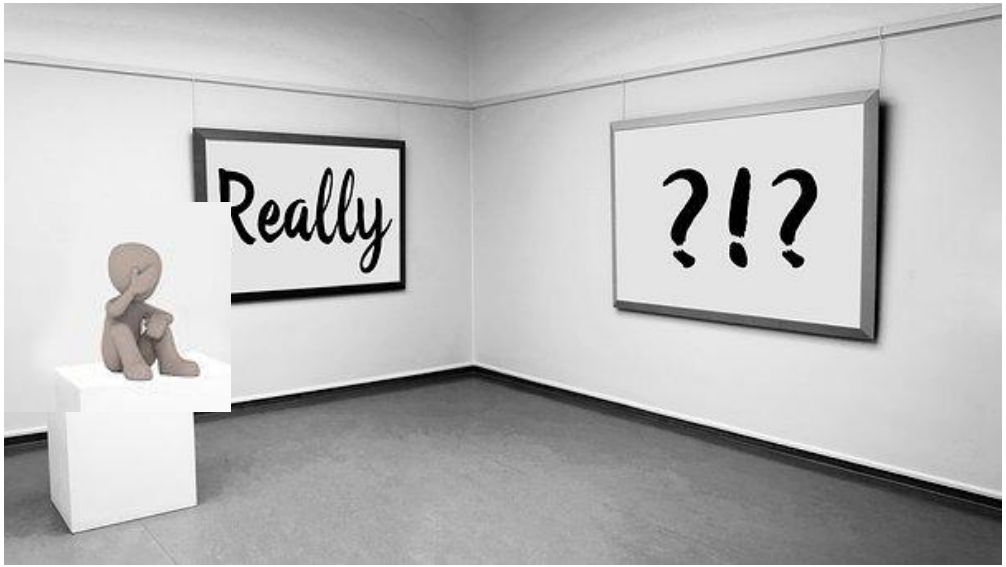

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Accessibility

```
intset& g( intset& exists, const intset& newset  )
{
    intvec toDelete;
    intvec toAdd;
    intvec common;

    std::set_difference(
        exists.begin(), exists.end(),
        newset.begin(), newset.end(),
        std::inserter( toDelete, toDelete.begin() )
    );
    std::set_difference(
        newset.begin(), newset.end(),
        exists.begin(), exists.end(),
        std::inserter( toAdd, toAdd.begin() )
    );
    std::set_intersection(
        exists.begin(), exists.end(),
        newset.begin(), newset.end(),
        std::inserter( common, common.begin() )
    );
    // do staff with toDelete
    // do staff with toAdd
    // do staff with common
    return exists;
}
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```

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Summary

Thank You

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