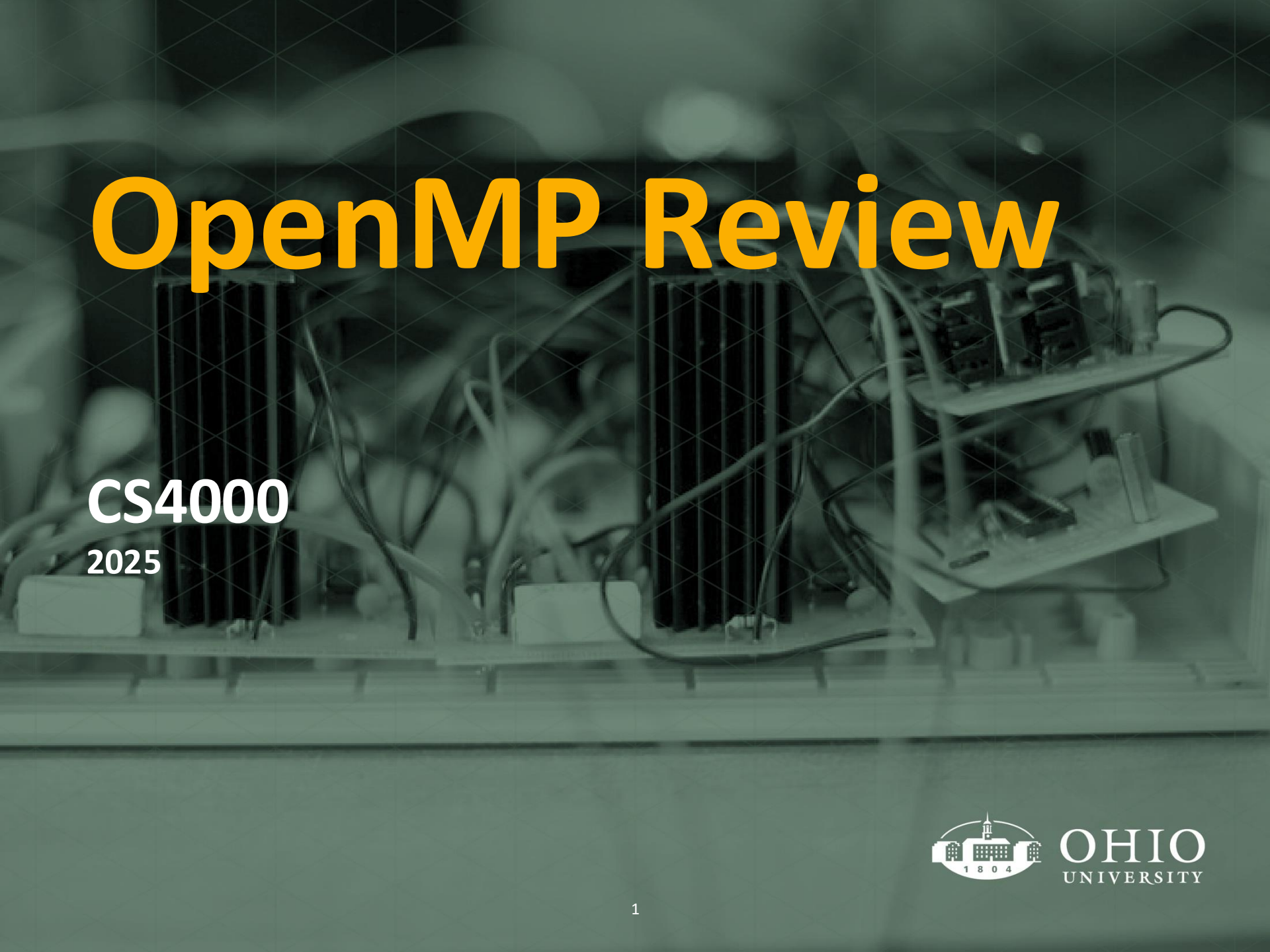

OpenMP Review

CS4000

2025

OHIO UNIVERSITY

Safe or not?

- Which of the following bits of code have race conditions or other problems?

Code 1

```
int ls=0;
#pragma omp parallel for
for (int i=0;i<100000;i++) {
    for (int j=0;j<=i;j++) {
            ls+=t[j];
    }
    a[i] = ls;
}
```

Code 2

```
f[0]=1;
f[1]=1;
#pragma omp parallel for
for (int i=2;i<1000;i++) {
      f[i] = f[i-1] + f[i-2];
}
```

Code 3

```
f[0]=1;
f[1]=1;
#pragma omp parallel for
for (int i=2;i<1000;i++) {
#pragma omp critical
      f[i] = f[i-1] + f[i-2];
}
```

Code 4

```
sum=0;
#pragma omp parallel for
for (int i=0;i<1000;i++) {
    if (A[i]<10) {
        sum++;
    }
}
```

Code 5

```
max_v=A[0];
#pragma omp parallel for
for (int i=0;i<1000;i++) {
    if (max_v < A[i]) {
        max_v=A[i];
    }
}
```

Code 6

```
max_v=A[0];
#pragma omp parallel for
for (int i=0;i<1000;i++) {
    if (max_v < A[i]) {
#pragma omp critical
        max_v=A[i];
    }
}
```

Code 7

```
max_v=A[0];
#pragma omp parallel for
for (int i=0;i<1000;i++) {
#pragma omp critical
    if (max_v < A[i]) {
        max_v=A[i];
     }
}
```

Code 8

```
bool prime = true;
int m = 1001;
#pragma omp parallel for
for (int i=2;i*i<m;++i) {
  if (m%i == 0) {
#pragma omp critical
    prime = false;
  }
}
```

Code 9

```
#pragma omp parallel for
for (int i=0;i<1000;i++) {
    if (A[i]<10) {
#pragma omp atomic
        sum++;
    }
  }
}
```

Code 11

```
void f(int *ptrx)
{
   (*ptrx)++;
}
int main() {
   int sum=0;
#pragma omp parallel for
   for (int i=0;i<10000;i++) {
      f(&sum);
   }
}
```