Array of Structures (AoS)
Vs
Structure of Arrays(SoA)

Array of Structure

```
struct myclass
{
int sub1;
int sub2;
int sub3;
int sub4;
};
```

s1	s2	s3	s4	s1	s2	s3	s4	s1	s2	s3	s4	.	.	.	.	s1	s2	s3	s4

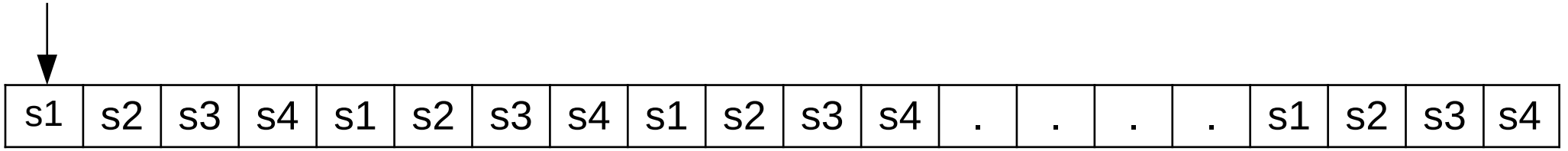
Array of Structure (CPU)

```
for (all students)
{
total_marks[i] = s1[i] + s2[i] + s3[i] + s4[i];
}
```

s1	s2	s3	s4	s1	s2	s3	s4	s1	s2	s3	s4	.	.	.	.	s1	s2	s3	s4

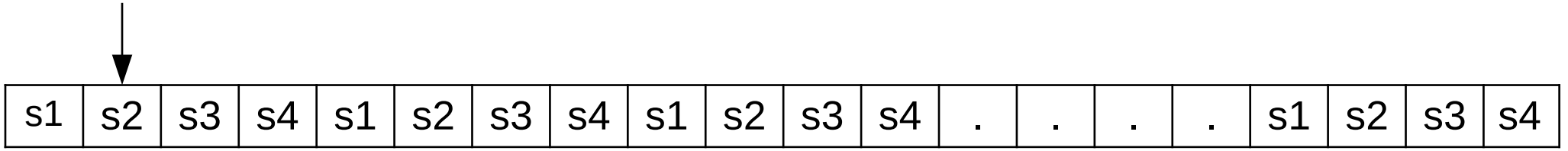
Array of Structure (CPU)

```
for (all students)
{
total_marks[i] = s1[i] + s2[i] + s3[i] + s4[i];
}
```



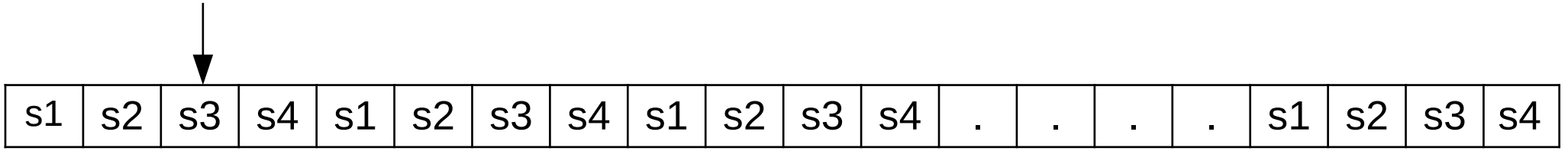
Array of Structure (CPU)

```
for (all students)
{
total_marks[i] = s1[i] + s2[i] + s3[i] + s4[i];
}
```



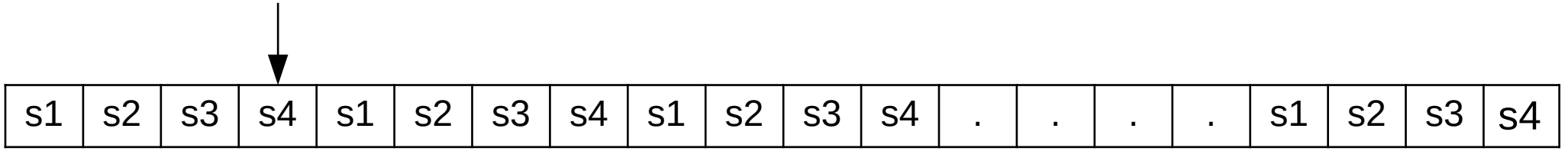
Array of Structure (CPU)

```
for (all students)
{
total_marks[i] = s1[i] + s2[i] + s3[i] + s4[i];
}
```



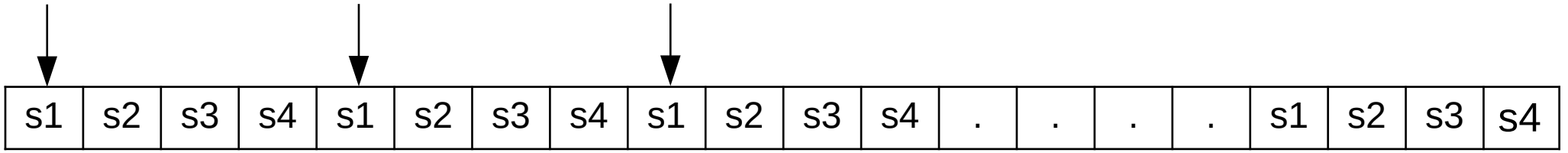
Array of Structure (CPU)

```
for (all students)
{
total_marks[i] = s1[i] + s2[i] + s3[i] + s4[i];
}
```



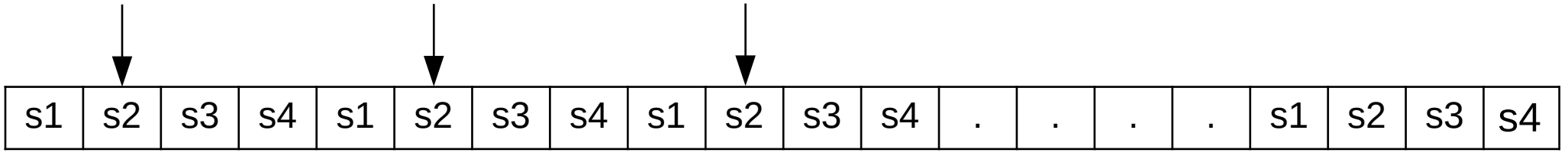
Array of Structure (GPU)

```
for (all students)
{
total_marks[i] = s1[i] + s2[i] + s3[i] + s4[i];
}
```



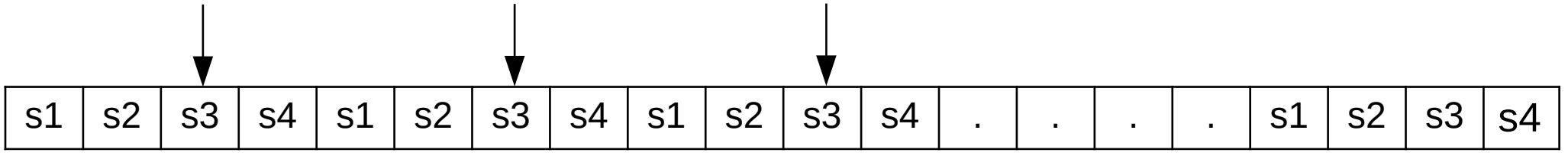
Array of Structure (GPU)

```
for (all students)
{
total_marks[i] = s1[i] + s2[i] + s3[i] + s4[i];
}
```



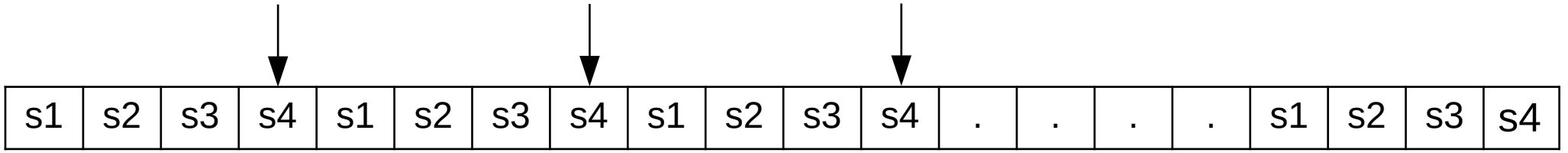
Array of Structure (GPU)

```
for (all students)
{
total_marks[i] = s1[i] + s2[i] + s3[i] + s4[i];
}
```



Array of Structure (GPU)

```
for (all students)
{
total_marks[i] = s1[i] + s2[i] + s3[i] + s4[i];
}
```



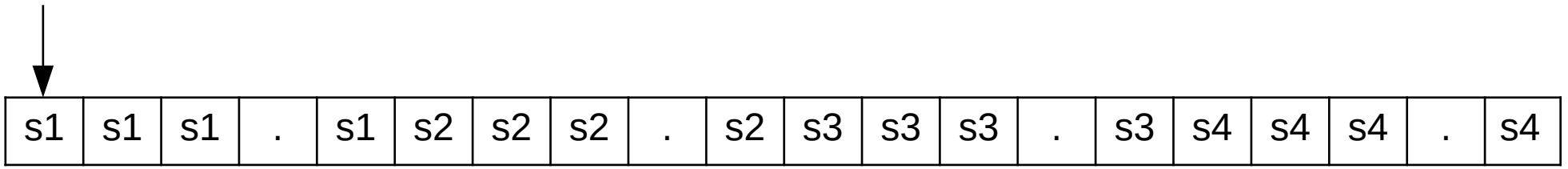
Structure of Arrays

```
struct myclass
{
int sub1[100];
int sub2[100];
int sub3[100];
int sub4[100];
}
```

s1	s1	s1	.	s1	s2	s2	s2	.	s2	s3	s3	s3	.	s3	s4	s4	s4	.	s4

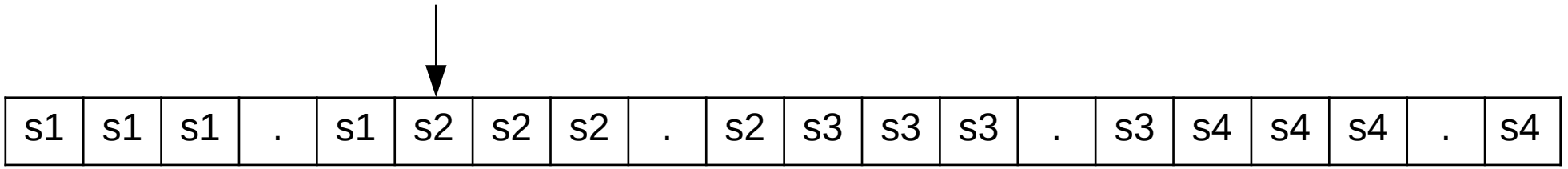
Structure of Arrays (CPU)

```
for (all students)
{
total_marks[i] = s1[i] + s2[i] + s3[i] + s4[i];
}
```



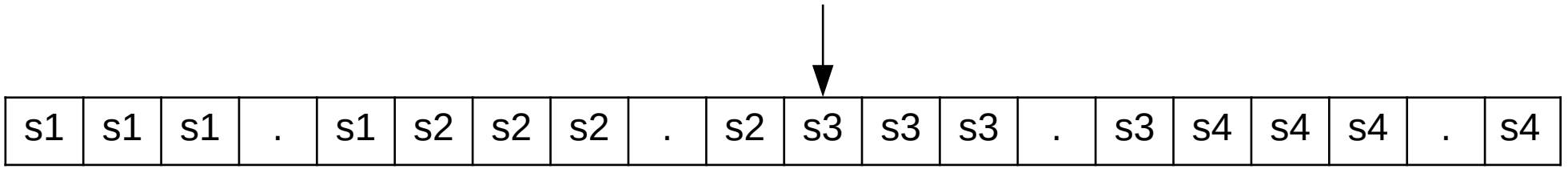
Structure of Arrays (CPU)

```
for (all students)
{
total_marks[i] = s1[i] + s2[i] + s3[i] + s4[i];
}
```



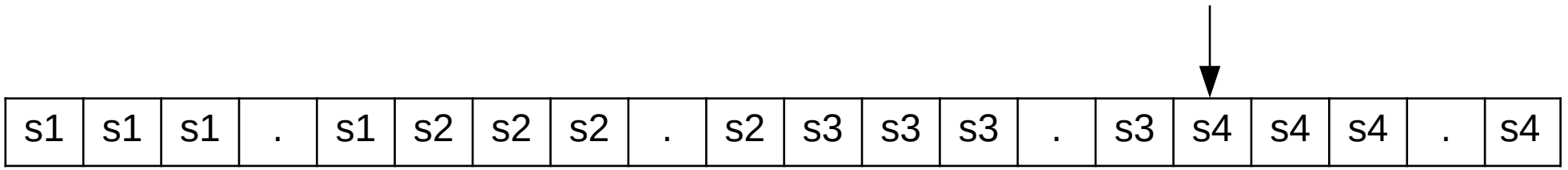
Structure of Arrays (CPU)

```
for (all students)
{
total_marks[i] = s1[i] + s2[i] + s3[i] + s4[i];
}
```



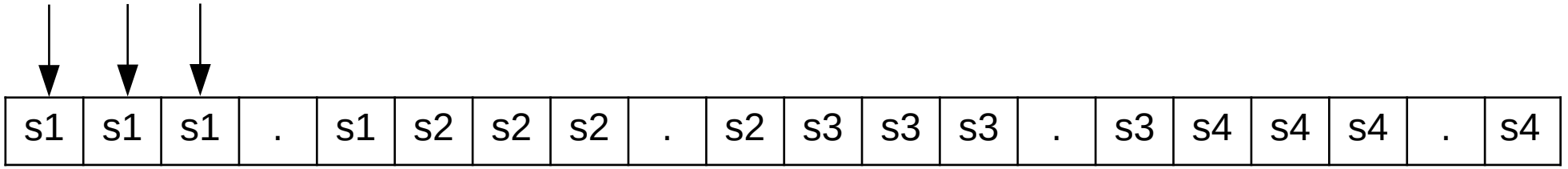
Structure of Arrays (CPU)

```
for (all students)
{
total_marks[i] = s1[i] + s2[i] + s3[i] + s4[i];
}
```



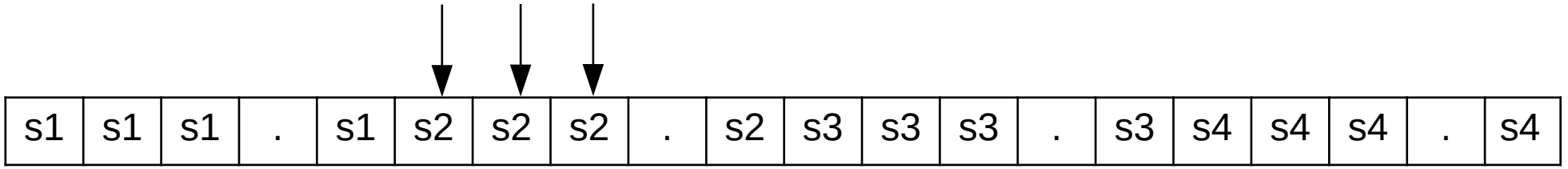
Structure of Arrays (GPU)

```
for (all students)
{
total_marks[i] = s1[i] + s2[i] + s3[i] + s4[i];
}
```



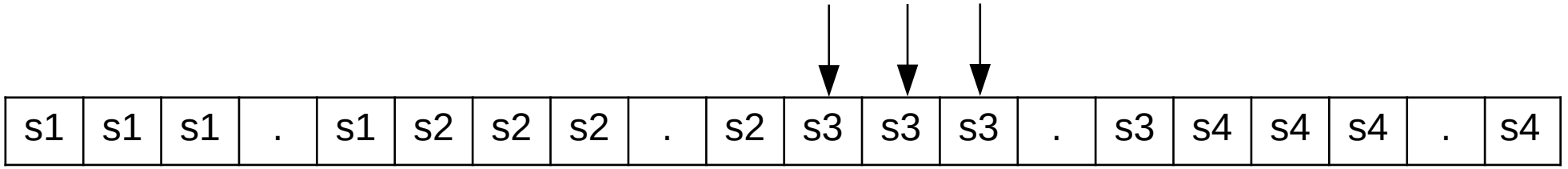
Structure of Arrays (GPU)

```
for (all students)
{
total_marks[i] = s1[i] + s2[i] + s3[i] + s4[i];
}
```



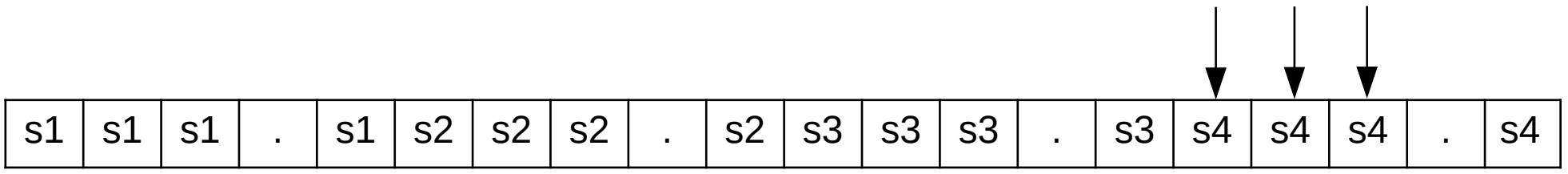
Structure of Arrays (GPU)

```
for (all students)
{
total_marks[i] = s1[i] + s2[i] + s3[i] + s4[i];
}
```



Structure of Arrays (GPU)

```
for (all students)
{
total_marks[i] = s1[i] + s2[i] + s3[i] + s4[i];
}
```



Conclusion?

- Which is better for CPU?
- Which is better for GPU?