**SECTION B:**

## Quiz!

On the right is the virtual address space of a process.

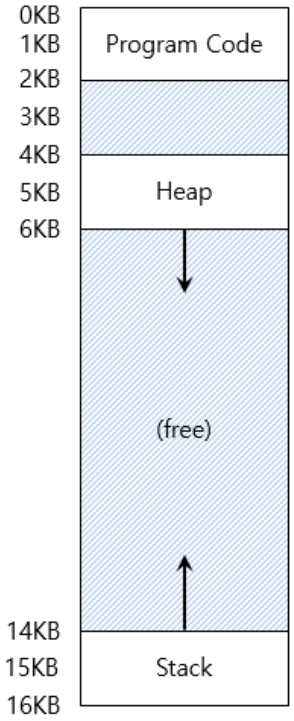
This here is the base and size of each segment in physical memory.

| Segment | Base | Size | Grows Positive? |
|---|---|---|---|
| Code | 32K | 2K | 1 |
| Heap | 34K | 2K | 1 |
| Stack | 28K | 8K | 0 |

The top bits of the virtual address specify the segments as shown below:

| Segment | bits |
|---|---|
| Code | 00 |
| Heap | 01 |
| Stack | 10 |
| Stack | 11 |

Take your roll number, add to it 10000. Consider the result as a virtual address. Find its corresponding physical address.




33

Supposing your Roll Number is: 80

Virtual address (VA):
10000 + 100 = 10080

VA in binary:
<u>10</u> 0111 0110 0000
(This conversion could be avoided simply by looking at the VA; as it is more than half of 16k, it is expected that its binary would have 10 or 11 at the highest two bits)
As the highest bits are “10”, VA lies in stack region.

Subtract VA from Top of stack in Virtual address space:
16k – 10080
= $16 \times 2^{10}$ – 10080
= 16384 – 10080
= 6304

Physical address:
Stack base – 6304
= 28k – 6304
= 28672 – 6304 = **22368**

**SECTION A:**

## Quiz!

On the right is the virtual address space of a process.

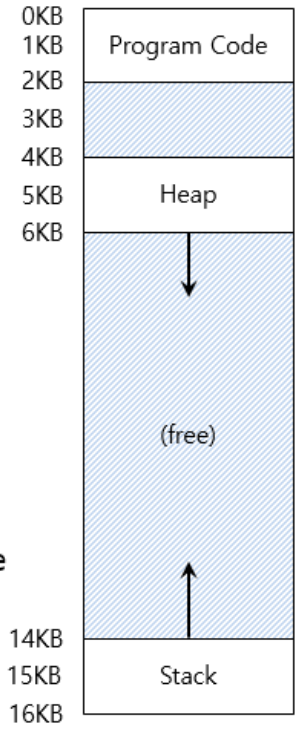
This here is the base and size of each segment in physical memory.

| Segment | Base | Size | Grows Positive? |
|---|---|---|---|
| Code | 32K | 2K | 1 |
| Heap | 34K | 2K | 1 |
| Stack | 28K | 8K | 0 |

The top bits of the virtual address specify the segments as shown below:

| Segment | bits |
|---|---|
| Code | 00 |
| Heap | 01 |
| Stack | 10 |
| Stack | 11 |

Take your roll number, subtract it from 10000. Consider the result as a virtual address. Find its corresponding physical address.




33

Supposing your Roll Number is: 80

Virtual address (VA):
10000 – 100 = 9920

VA in binary:
<u>10</u> 0110 1100 0000
(This conversion could be avoided simply by looking at the VA; as it is more than half of 16k, it is expected that its binary would have 10 or 11 at the highest two bits)
As the highest bits are “10”, VA lies in stack region.

Subtract VA from Top of stack (16K) in Virtual address space:
16K – 9920
= $16 \times 2^{10} – 9920$
= 16384 – 9920
= 6464

Physical address:
Stack base – 6464
= 28K – 6464
= 28672 – 6464 = **22208**