Computer Architechture
Assignment 3

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3.60

A .

$$x \in \texttt{\%rdi}$$
$$n \in \texttt{\%esi}$$
$$result \in \texttt{\%rax}$$
$$mask \in \texttt{\%rdx}$$

B .

$$result = 0$$
$$mask = 1$$

C .

$$mask! = 0$$

D .

$$mask = mask << n$$

E .

```
long loop(long x, int n) {
    long result = 0;
    long mask;
    for (mask = 1; mask != 0; mask = mask << n) {
result |= mask&x;
    }
    return result;
}
```

3.64

A .

$$TYPE\ \ D[i][j][k]; \quad \&D[i][j][k] = x_D + L(S * T * i + T * j + k)$$

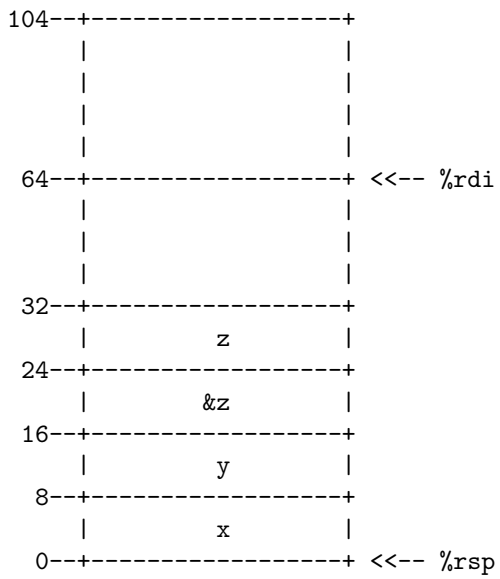
such that $L = sizeof(TYPE)$, and x_D means the address to D, and D is data.

B .

$$R = 7$$
$$S = 5$$
$$T = 13$$

3.67

A .

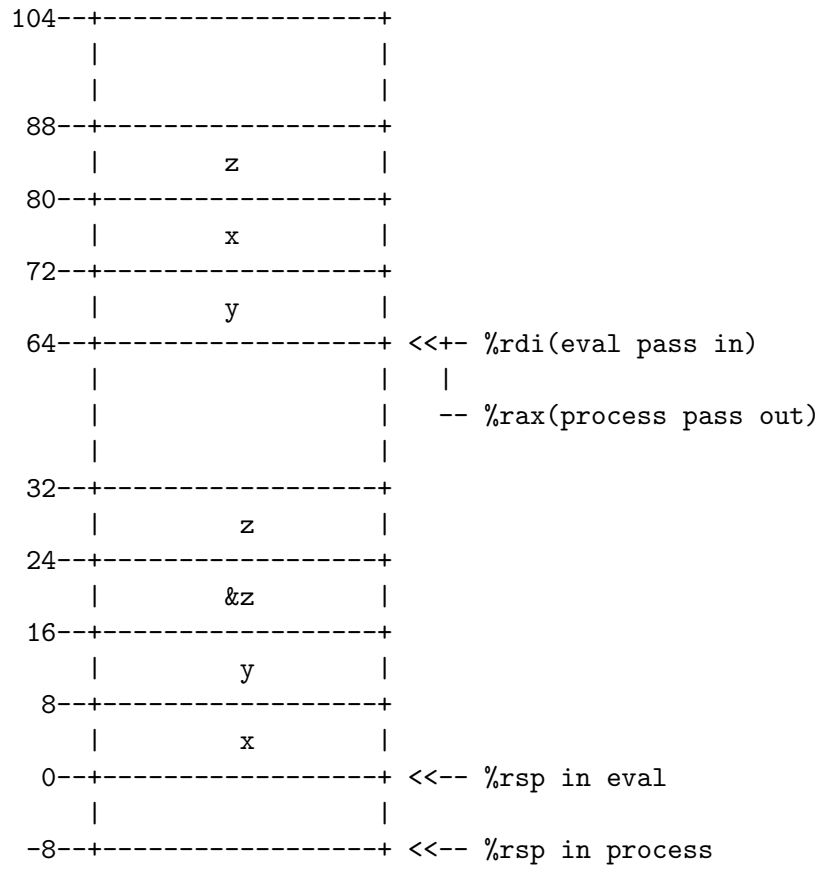


B .
eval passes a new address to the register `%rsp+64` for processing,

C .
the process accesses *s* by `%rsp+offset`, rather than by `%rdi`.

D .
eval passes the address `%rsp+64` to be processed. the mentioned process stores the data as *beginning* and finally, returns the address,

E .



3.69 nice

A .
we can deduce from the question that:

$$7 * 40 + 8 = 288 = \texttt{0x120}$$

thus:

$$CNT = 7$$

B .

```
typedef struct {
  long idx,
  long x[4]
 } a_struct
```