1.

PC	Instruction	%rdi	%rsi	%rax	%rsp	*%rsp	Description
M1	0x400560	callq	10	-	-	0x7fffffffe820	-	Call first(10)
F1	0x400548	lea	10	11	-	0x7fffffffe818	0x400565	%rsi = 1 + %rdi =11
F2	0x40054c	sub	9	11	-	0x7fffffffe818	0x400565	%rdi = 10 - 1 = 9
F3	0x400550	callq	9	11	-	0x7fffffffe810	0x400555	Call last(9,10)
L1	0x400540	mov	9	11	9	0x7fffffffe810	0x400555	%rax = %rdi
L2	0x400543	imul	9	11	99	0x7fffffffe810	0x400555	%rax = %rsi*%rax = 99
L3	0x400547	retq	9	11	99	0x7fffffffe818	0x400555	returns
F4	0x400555	repz retq	9	11	99	0x7fffffffe820	0x400565	returns
M2	0x400565	mov	9	11	99	0x7fffffffe820	-	%rdx = %rax

2.

```
int a;
char b;
long *u;
char *v;
~
```

3.

a. %r16->a1(a+1)

%r14->a2(a+2)

%r13->a3(a+3)

%r12->a4(a+4)

%rbp->a5(a+5)

%rbx->a0(a)

b. a6(a+6), a7(a+7)

c. x86-64 архитектурт зөвхөн 6 ширхэг дуудагдсан талаас хадгалах регистр байдаг тул бүх утгыг хуваарилаж чадахгүй.

4.

a. %rbx->x utgiig hadgalj baina

b.
```
long rfun(unsigned long x) {
  if (x == 0) {
    return 0;
  }
  unsigned long nx = x >> 2;
  long rv = rfun(nx);
  return x + rv;
}
```