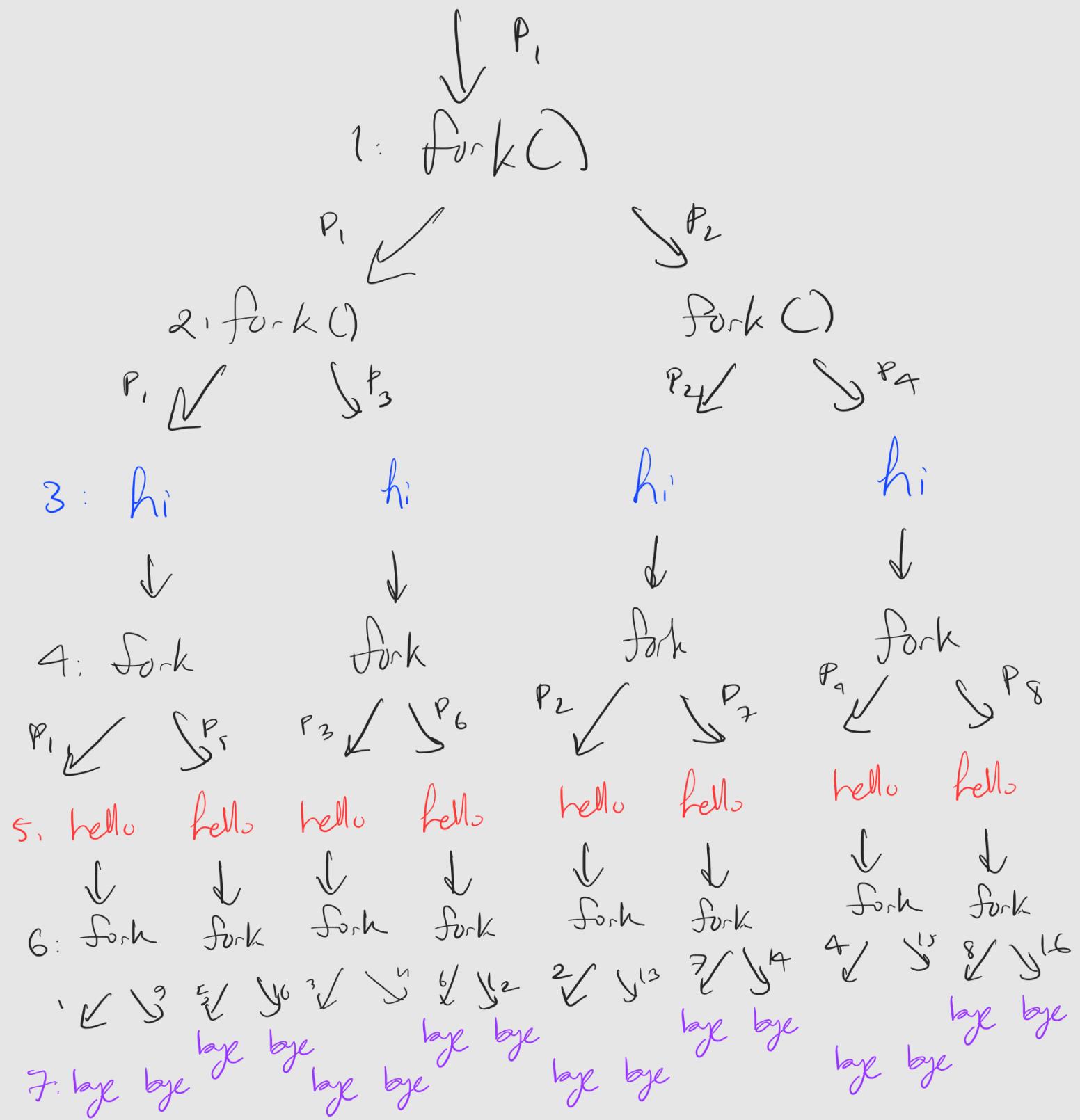


1. Find outputs of the following code.

```
main(){
    1 fork();
    2 fork();
    3 printf("hi\n");
    4 fork();
    5 printf("hello\n");
    6 fork();
    7 printf("bye\n");
}
```



hi: 4

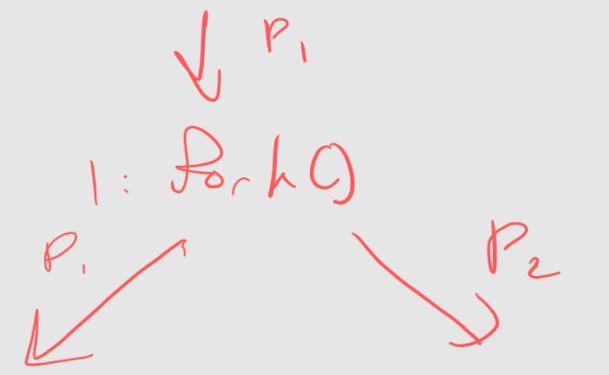
hello: 8

bye: 16

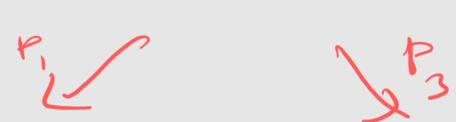
In some
order. Try
running the code
to see it.

2. Find outputs of the following code.

```
main(){
    1 fork();
    2 fork();
    3 c=fork();
    4 if(c>0){
        5 printf("hi\n");
        6 fork();
    }
    7 fork();
    8 printf("bye\n");
}
```



2. Fork()



Fork()



3: c-fork()



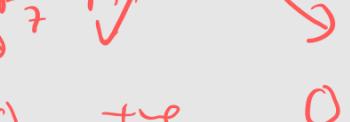
c-fork()



c-fork()



c-fork()



8

C = tve

4: if ✓



✗

✓

✗

✓

✗

✓

✗

5: hi

|

hi

|

hi

|

hi

|

↓

↓

↓

↓

↓

↓

6:

fork

↓

fork

↓

fork

↓

fork

↓

|

7:

fork

/\

fork

/\

fork

/\

fork

/\

fork

8:

bye

/\

bye

/\

bye

/\

bye

/\

bye

/\

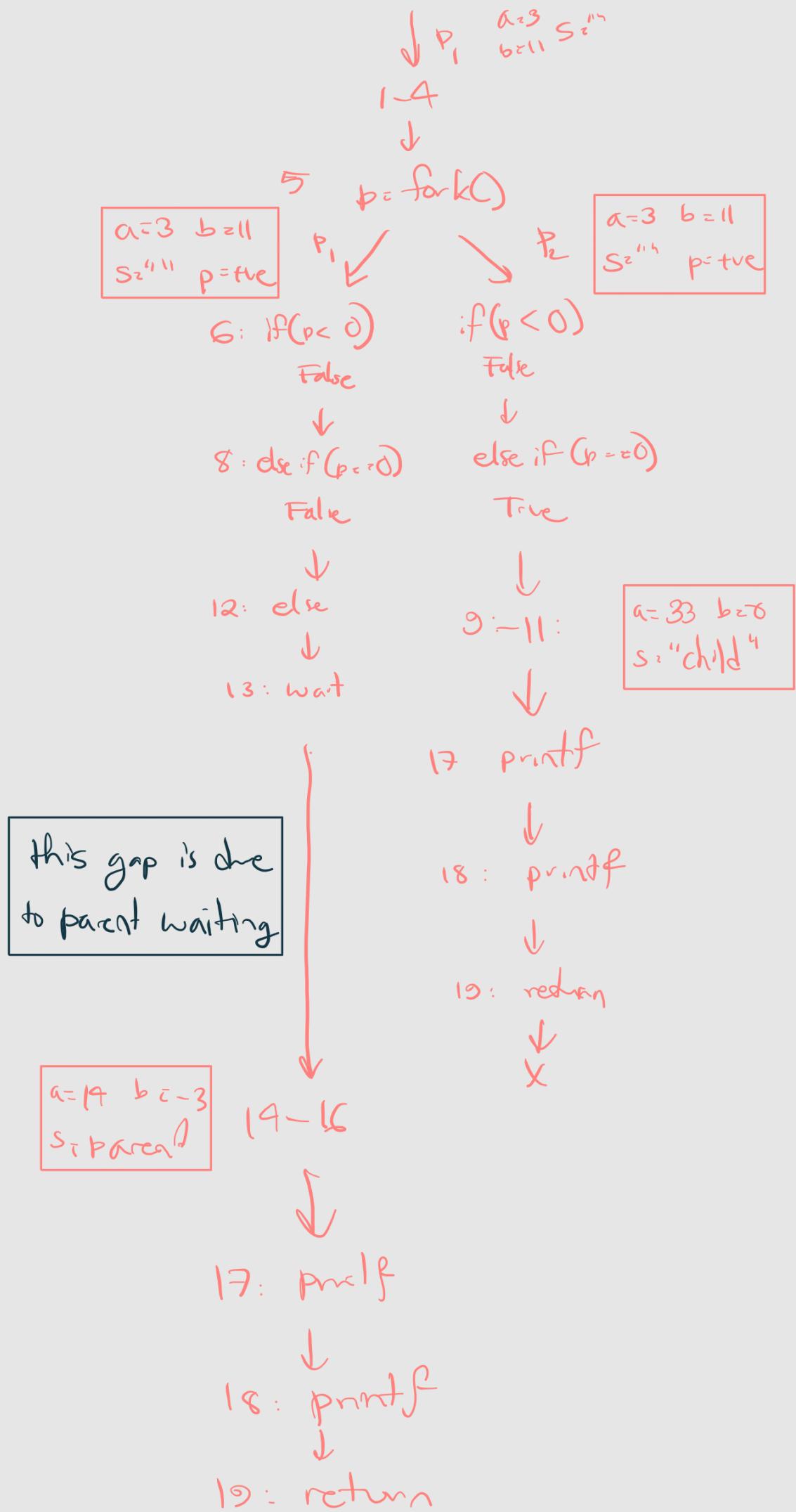
bye

3. Find outputs of the following code.

```
int main(){
    1 pid_t p;
    2 int a=3;
    3 int b=11;
    4 char s[20];
    5 p=fork();
    6 if(p<0){
        7 printf("fork failed\n");
    }
    8 else if(p==0){
        9 strcpy(s,"child");
        10 a=a*b;
        11 b=b/a;
    }
    12 else{
        13 wait();
        14 strcpy(s,"parent");
        15 a=a+b;
        16 b=b-a;
    }
    17 printf("%s is printing a= %d\n",s,a);
    18 printf("%s is printing b= %d\n",s,b);

    19 return 0;
}
```

Only one fork
(line 5), so
more important
is tracking the
values



Output

child is printing $a = 33$

child is printing $b = 0$

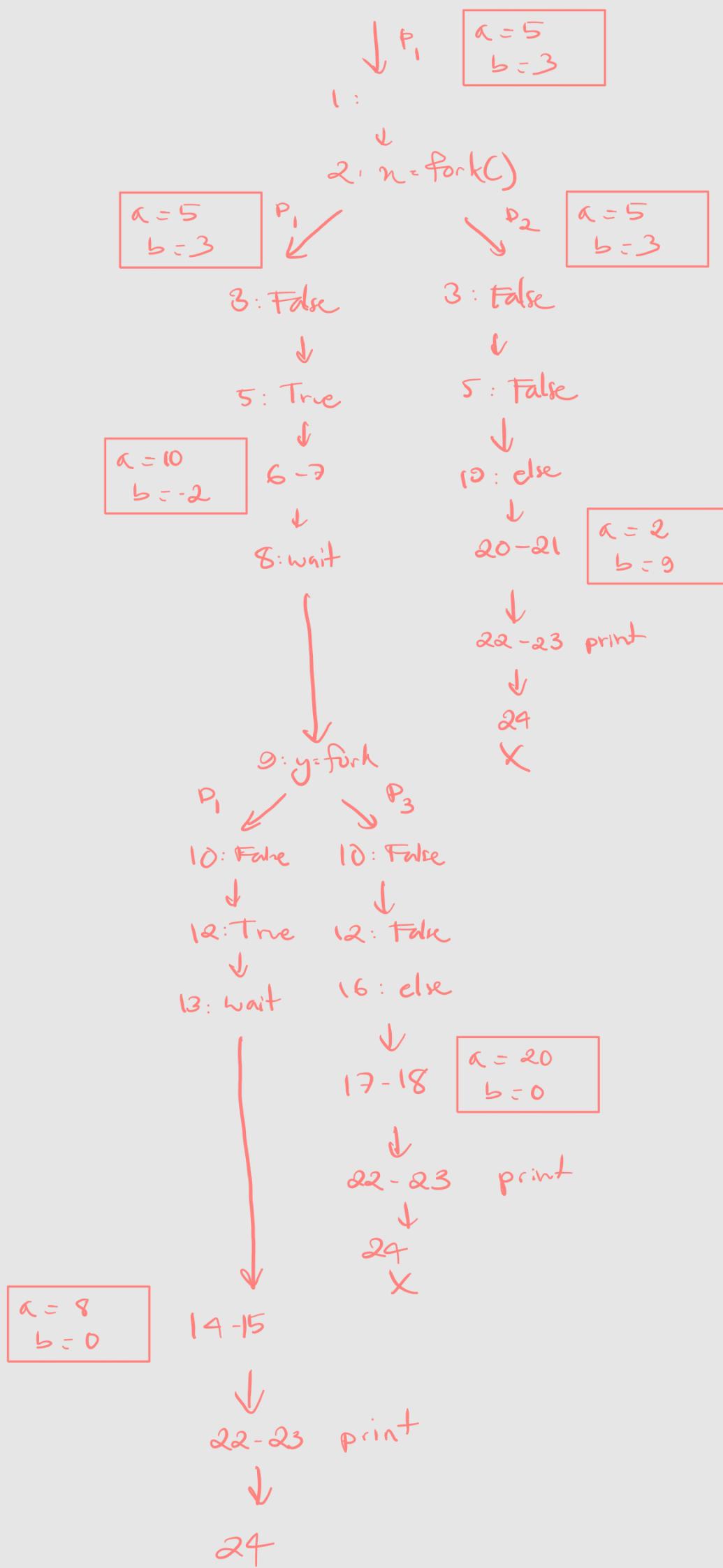
parent is printing $a = 14$

parent is printing $b = -3$

4. Find outputs of the following code.

```
static int a=5;
static int b=3;
int main(){
    1 pid_t x, y;
    2 x=fork();
    3 if(x<0){
        4     printf("fork failed\n");
    }
    5 else if(x>0){
        6 a=a+5;
        7 b=b-5;
        8 wait();
        9 y=fork();
        10 if(y<0){
            11     printf("fork failed\n");
        }
        12 else if(y>0){
            13     wait();
            14     a=a-2;
            15     b=b+2;
        }
        16 else{
            17     a=a*2;
            18     b=b/3;
        }
    }
    19 else{
        20     a=a/2;
        21     b=b*3;
    }
    22 printf("a= %d\n",a);
    23 printf("b= %d\n",b);

    24 return 0;
}
```



Output:

$$a = 2$$

$$b = 9$$

$$a = 20$$

$$b = 0$$

$$a = 8$$

$$b = 6$$