

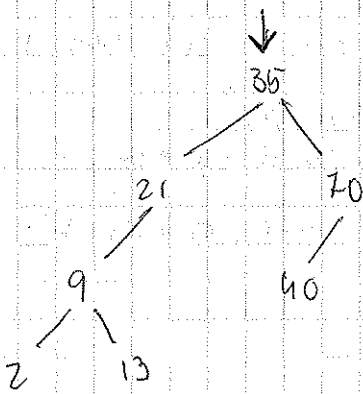
```
typedef struct sAbin
{
    int valor;
    struct sAbin * esq, * dir;
} Abin, * pAbin;
```

```
Abin consAbin (Abin a, int n);
```

```
void listAbin (Abin a);
```

```
int main ()
{
    Abin a1 = NULL;
    A1 = consAbin (consAbin (consAbin (
        consAbin (a1, 35), 70), 21), 9);
    A1 = consAbin (consAbin (consAbin (
        a1, 40), 2), 13);
    ...
}
```

a)



[True, True, False] => 13

```
typedef int boolean;
```

```
# define True 1
# define False 0
```

```
typedef struct sCaminho
{
    boolean valor;
    struct sCaminho * esq;
} Caminho, * pCaminho;
```

```
boolean evalto (Abin a, Caminho e)
```

```
{
    if (!a) return False;
    else if (!e) return True;
    else if (e->valor) return evalto (a->esq, e->esq);
    else return evalto (a->dir, e->dir);
}
```

```

void listaNodosCaminho (A bin a, Caminho e)
{
    if (!e) printf("x", a->valor);
    else
    {
        printf("x", a->valor);
        if (e->valor) listaNodosCaminho (a->esq, e->esq);
        else
        {
            listaNodosCaminho (a->dir, e->esq);
        }
    }
}
    
```

```

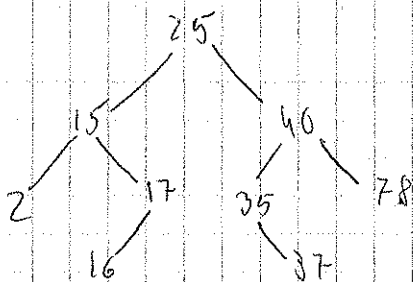
Caminho procura (A bin a, int n)
{
if (!a) return NULL;
    if (!a || !existe(a, n) || (a->valor == n))
        return NULL;
    else
        if (a->valor > n)
            return append (conCaminho (NULL, true),
                procura (a->esq, n));
        else
            return append (conCaminho (NULL, false),
                procura (a->dir, n));
}
    
```

```

boolean existe (A bin a, int n)
{
    if (!a) return false;
    else
        if (a->valor == n) return true;
        else
            if (a->valor > n)
                return existe (a->esq, n);
            else
                return existe (a->dir, n);
}
    
```

```

Caminho append (Caminho e1, Caminho e2)
{
    if (!e1) return e2;
    else
    {
        e1->esq = append (e1->esq, e2);
        return e1;
    }
}
    
```



i	1	2	3	4	5	6	7	8	9	10	11	12	13	
nodes[i]	25	15	40	2	17	35	78	-1	-1	16	-1	-1	37	-1

nodes[i] = 17

esq(i) = 2 * i + 1

dir(i) = 2 * i + 2

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LCC-T-(64)

```
#typedef struct sABest  
{  
  int nodes [MAX_SIZE];  
  int ptr;  
} ABest;  
  
int main ()  
{  
  ABest a1 = {1, 1, 0};  
}
```

