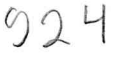
Lista Teórica - AED II -

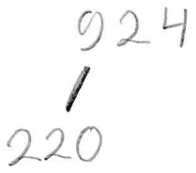
1-a) {924, 220, 911, 244, 898, 258, 362, 363, 360, 350}

em uma ABB:

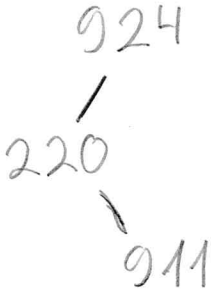
i=1 →



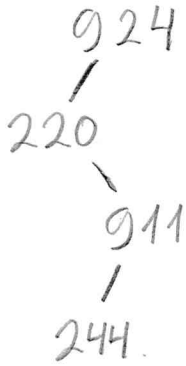
i=2 →



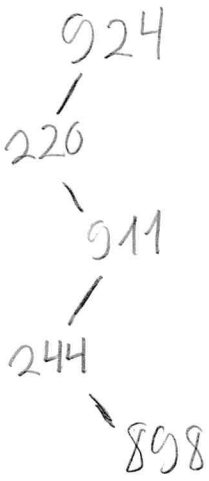
i=3 →



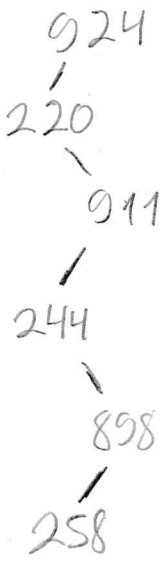
i=4 →



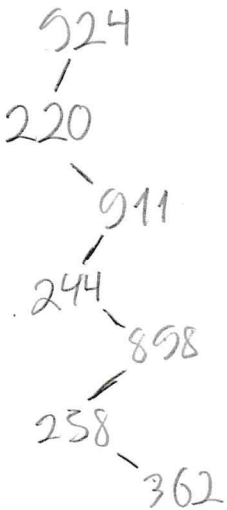
i=5 →



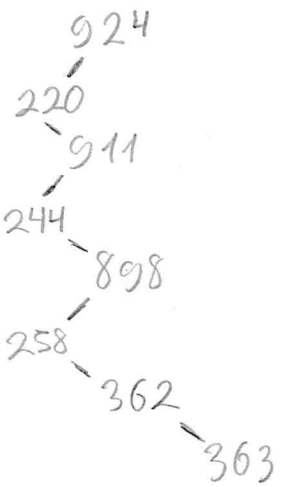
i=6 →



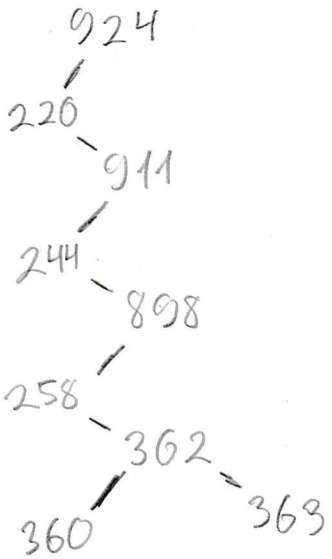
i=7 →



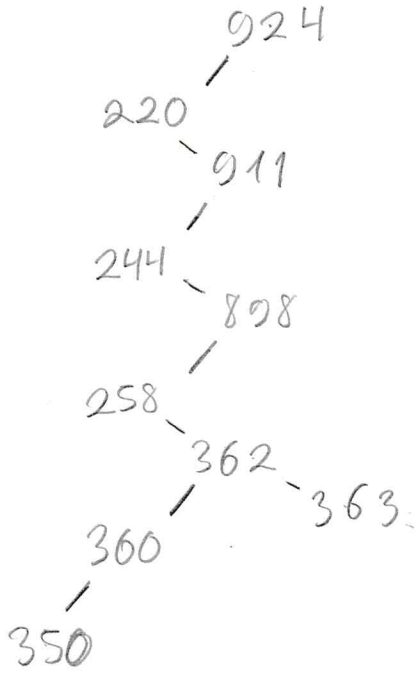
i=8 →



i=9 →

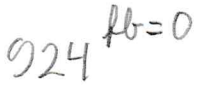


i=10 →

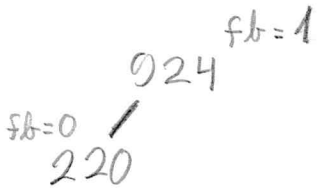


b) No mesmo livro, mas no AVL, temos:

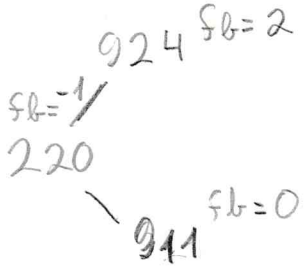
i=1 →



i=2 →

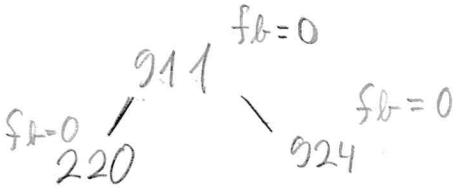


i=3 →

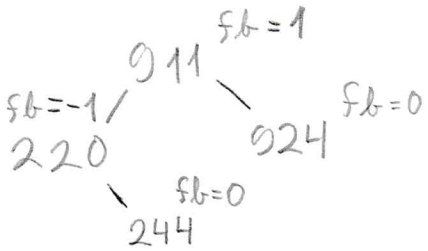


rot →

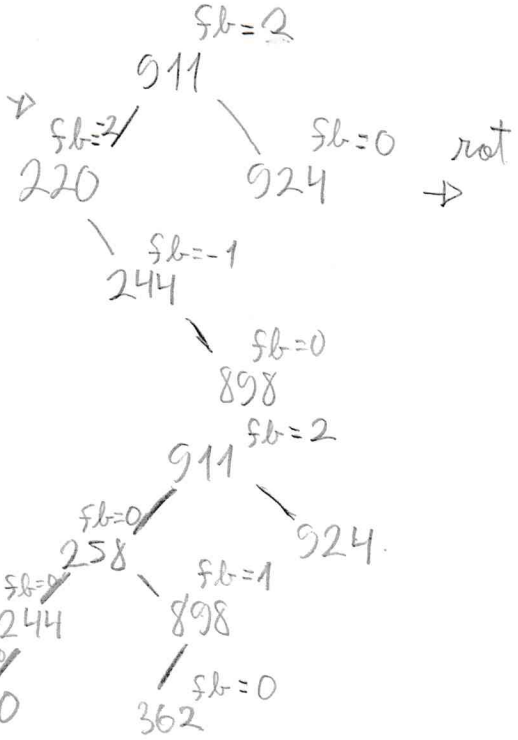
i=3 →



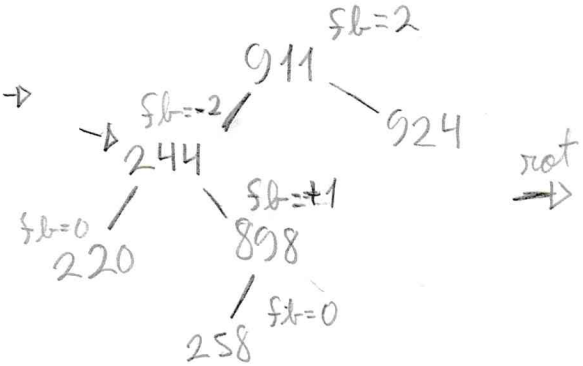
i=4 →



i=5 →

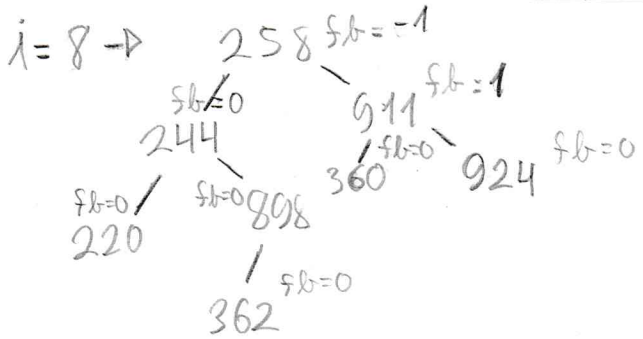


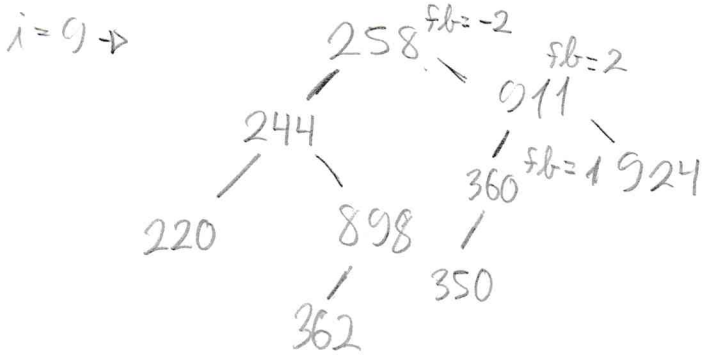
i=6 →



rot →

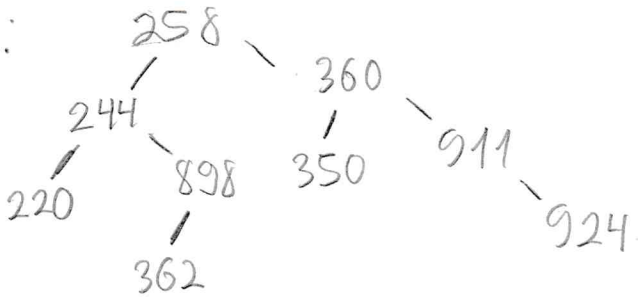
i=7 →



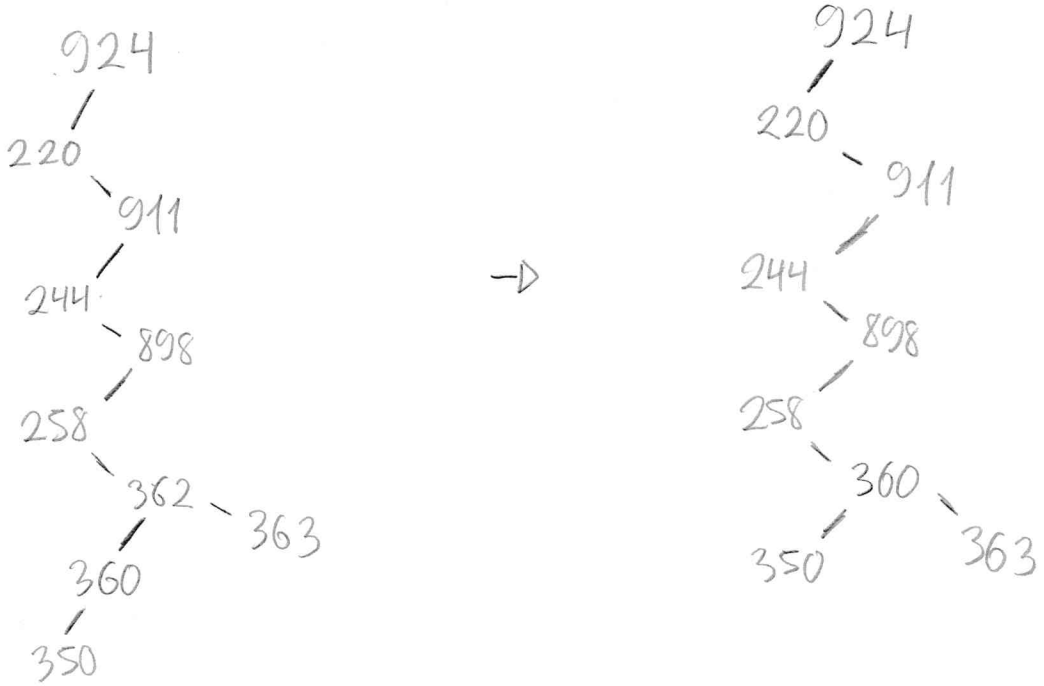


raiz →

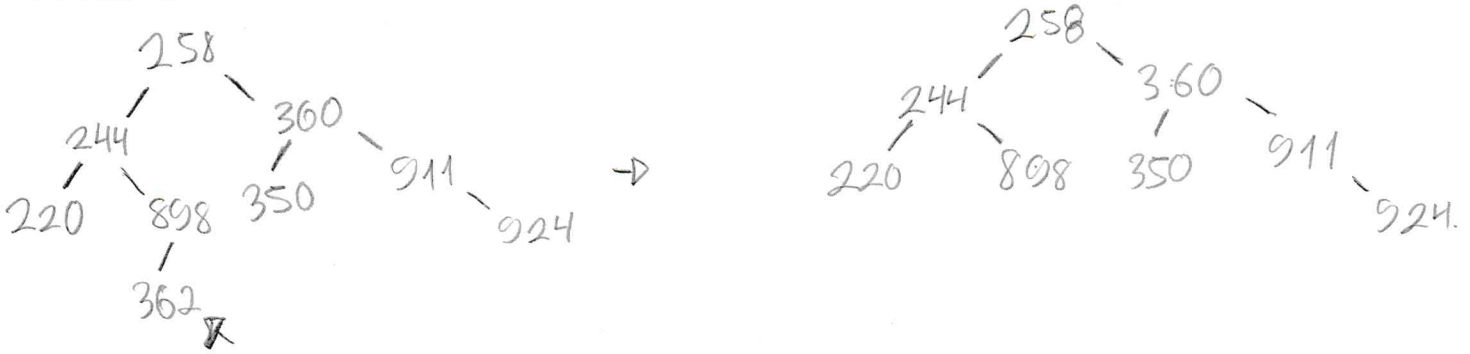
Árvore final:



c) Removendo 362 da ABB:



Removendo da AVL, temos:



2- A remoção tem que ter três casos: nó sem filhos, nó com 1 filho e nó com 2 filhos:

```
int remove (Arvbtl raiz, int valor)
 if (raiz == NULL)
       return 0;
 if (valor < raiz -> info) { // Balanceamento da direita
   if((res = remove (raiz -> esq, valor)) == 1 ) {
    if (fb_Nó (raiz) >= 2) {
     if (altura_Nó (raiz -> dir -> esq) <= altura_Nó (raiz -> dir -> dir))
           Rotação RR;
     else
           Rotação RL;
     }
     }
     }
 if ((raiz -> info) < valor) { // Balanceamento da esquerda.
   if ((res = remove ( raiz -> dir, valor )) == 1) {
    if ( fb_Nó (raiz) >= 2 ) {
     if ( altura_Nó ( raiz -> esq -> dir) <= altura_Nó (raiz -> esq -> esq))
           Rotação LL
     else
           Rotação LR
}}}
```

```
if(raiz->info == valor){ // caso de um ou nenhum filho.
    if(raiz->esq == NULL || raiz->dir == NULL){
ArvAVL noDescartavel = raiz;
    if(raiz->esq != NULL)
        raiz = raiz->esq;
    else
        raiz = raiz->dir;
    free(noDescartavel);
}else{ // caso dos dois filhos
ArvAVL aux = menor(raiz)
    raiz->info = aux->info;
remove(raiz->dir, raiz->info);
if(fb_No(raiz) >= 2){
if(Altura_No(raiz->esq->dir) <= Altura_No(raiz->esq->esq))
    RotacaoLL
else
    RotacaoLR
}
}
```

Note que no A.V.L, o recpo de remoção é substituir o nó mais a esquerda do sub-árvore direito, mas podia ser feito a remoção do nó mais a direita no sub-árvore esquerda, contanto que fosse feito o balanceamento no direito. A diferença mais notável do ABB e do AVL é que a ABB não necessito de auto-balanceamento na remoção, enquanto o AVL necessito. (Ló digo do prof. André Backes na sua aula de remoção).