(1) Advanced Data Structures

Batch - 5

Program - 6

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```
Btree Insertion (T, k)
r  root [T]
if  n[r] = 2t - 1
     S= Allocate Node ()
     root [T] = S
     leaf [S] = FALSE
     n[S] ⟶ 0
     C1 [S] ⟶ r
     Btree Split Child (S, 1, r)
     Btree Insert Non Full (S, k)
else   Btree Insert Non Full (r, k)
     Btree Insert Non Full (x, k)
 i = n[x]
 if leaf [x]
     while i ≥ 1 and k < key i[x]
     &      key i+1 [x] = key i[x]
            i = i - 1
     key i+1 [x] = k
     n[x] = n[x] + 1
else     while  i ≥ 1 and k < key i[x]
            i = i - 1
       i = i + 1
      if n [C i[x]] == 2t-1 {
      Btree Split Child (x, i, C i[x])
      if k > key i[x]
            i = i + 1
      Btree Insert Non Full ( C i[x], k)
Btree Split Child (x, i)
Btree Split Child ( x, i, y)
```

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(2)

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```
z = AllocatedNode()
leaf[z] = leaf[y]
n[z] = t-1
for j = 1 to t-1
    key j[z] = key j+t[y]
if not leaf[y]
    for j = 1 to t
        c j[z] = c j+t[y]
    n[y] = t-1
for j = n[x]+1 to i+1
    c j+1[x] = c j[x]
c i+1[x] = z
for j = n[x] to i
    key j+1[x] = key j[x]
key i[x] = key t[y]
n[x] = n[x]+1
```