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1BM19CS006

A

Date ....

Expt. No. ....

Red Black Tree

Page No. ....

```
void insert (int key) {
  Node* node = new Node(key);
   Node* y = NULL, *x = root;
   while (x) {
       y = x;
        if (node->data < x->data)
            x = x->left;
         else x = x->right;
   }
   node->parent = y;
    if (y) root = node;
     else if (node->data < y->data) y->left = node;
     else y->right = node;

     if (node->parent == NULL) {
        node->color = 0;
         return;
      }
     if (node->parent->parent == NULL) return;

     fixInsert(node);
}

void fixInsert (Node* k) {
    Node* u;
    while (k->parent->color == 1) {
        if (k->parent == k->perent->parent->right) {
           u = k->parent->parent->left;
           if (u->color == 1) {
```

Teacher's Signature : ....

Red-Black Tree

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```
    k->parent->color =0;
    k->parent->parent->color =1;
    k = k->parent->parent,
  } else {
     if (k==k->parent->left) {
           k =k->parent;
           rightRotate(k);
      }
      k->parent->color = 0;
      k->parent->parent->color =1;
      leftRotate(k->parent->parent);
    }
  }
} else {

    u =k->parent->parent->right;
   if (u->color ==1){
      u->color =0;
      k->parent->color =0
      k->parent->parent->color =1
      k = k->parent->parent;
    } else {
      if (k== k->parent->right) {
             k =k->parent;
             leftrotate(k);
      }
      k->parent->color =0;
      k->parent->parent->color =1;
      rightRotate(k->parent->parent);
    }
  }
   if (k==root); break;
 }
}
```