

```
struct node
```

```
{ int data;
```

```
  struct node * link;
```

```
};
```

```
struct node * XOR (struct node * a, struct node * b)
```

```
{ return (struct node *) ((uintptr_t)(a) ^ (uintptr_t)(b));
```

```
}
```

```
void insert_end (int data)
```

```
{ struct node * newnode = new (struct node);
```

```
  newnode → data = data;
```

```
  newnode → link = NULL;
```

```
  if (head == NULL)
```

```
  { head = newnode;
```

```
  }
```

```
  else
```

```
  { struct node * current = head;
```

```
    struct node * prev = NULL;
```

```
    struct node * x;
```

```
    while (current → link != prev)
```

```
    { x = current;
```

```
      current = XOR (current → link, prev);
```

```
    } prev = x;
```

```
    current → link = XOR (current → link, newnode);
```

```
    newnode → link = current;
```

```
  }
```

```
}
```

void insert begining (int data)

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```
{
    struct node * newnode = new (struct node);
    newnode->data = data;
    newnode->link = NULL;
    if (head == NULL)
    {
        head = newnode;
    }
    else
    {
        newnode->link = head;
        head->link = XOR(head->link, newnode);
        head = newnode;
    }
}
```