Today - Lecture 17 - CS162

1) Continue Creating Recursive Solutions!

Announcements:

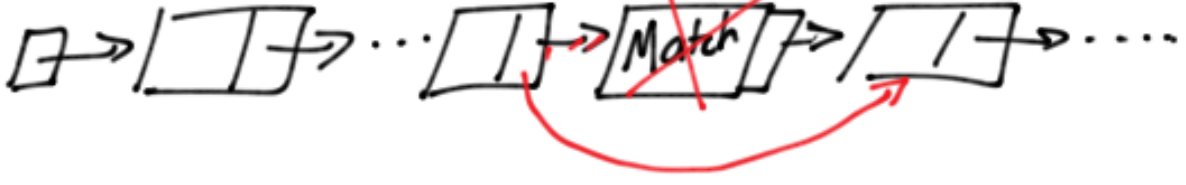
* Practice!
  - LLL insert, remove, traversal
  - recursion

Example #3 of Topic 5

1)  Do Nothing

2) 

Iterative

3) 

4) No Match – Do Nothing!

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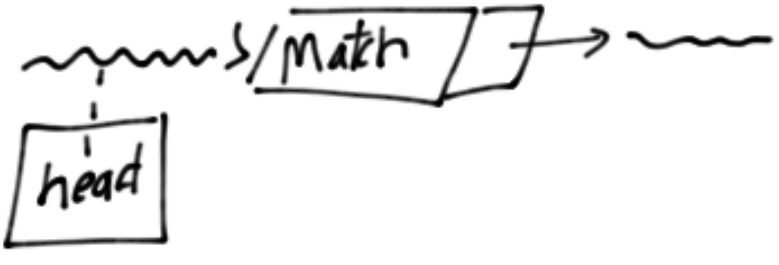
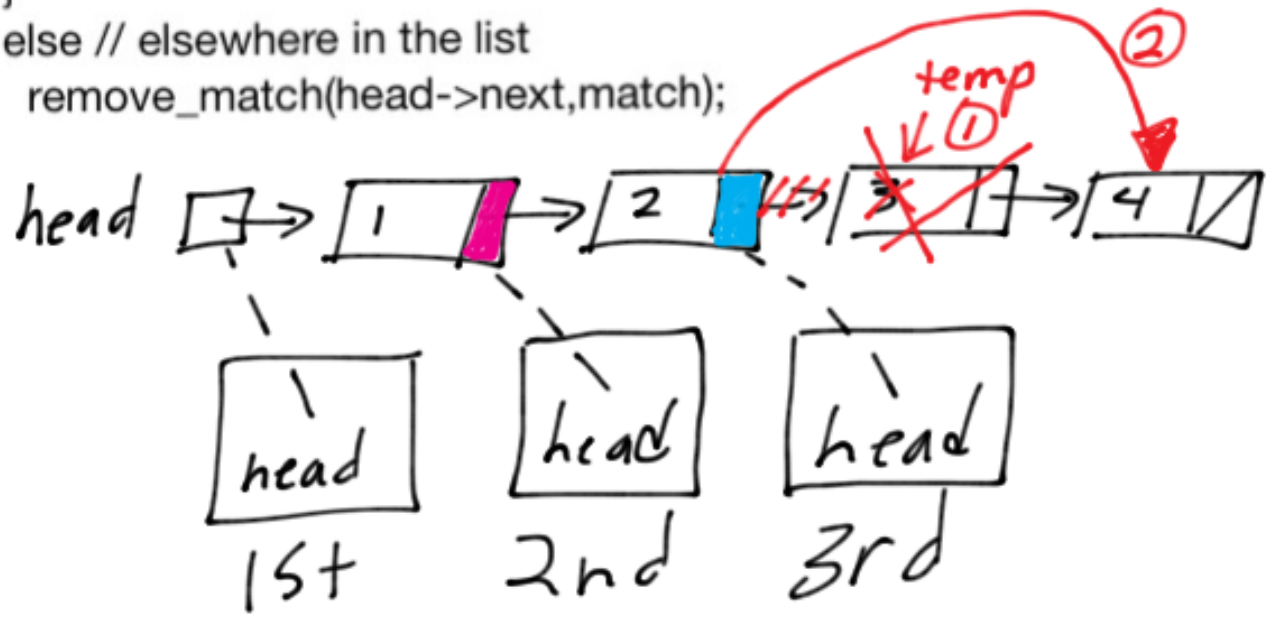
1)  head → Do Nothing
   - EMPTY
   - NO Match

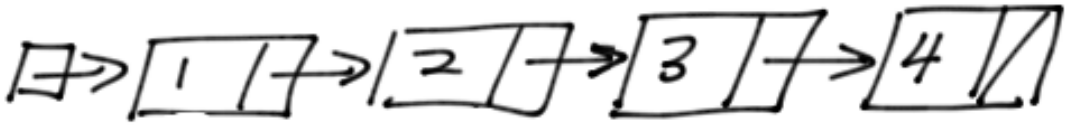
2) 

```
void remove_match(node * &  head, char match[])
{
    node * temp;
   //case 1 - empty list OR no match
   if (head == NULL) //if (!head)
     return;

   //case 2 - found a match!
   if (strcmp(head->name, match) == 0)
   {
      temp = head; //node to remove
      head = head->next;
      delete [] temp->name; //dyn. mem
      delete temp; //1st node
   }
   else // elsewhere in the list
    remove_match(head->next,match);
}
```



```
void remove_match(node * & head, char match[])
{
    node * temp;
   //case 1 - empty list OR no match
   if (head == NULL) //if (!head)
     return;

   //case 2 - found a match!
   if (strcmp(head->name, match) == 0)
   {
         temp = head; //node to remove
         head = head->next;
         delete [] temp->name; //dyn. mem
         delete temp; //1st node
   }
   else // elsewhere in the list
    remove_match(head->next,match):
}
```

what if we forgot this?



Alternative — Viable

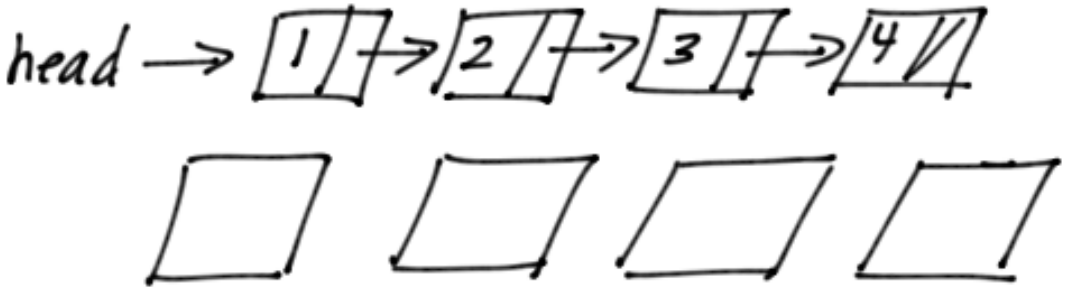
by value

```
node * remove_match(node *  head, char match[])
{
   node * temp;
  //case 1 - empty list OR no match
  if (head == NULL) //if (!head)
    return NULL;

  //case 2 - found a match!
  if (strcmp(head->name, match) == 0)
  {
        temp = head; //node to remove
        head = head->next;
        delete [] temp->name; //dyn. mem
        delete temp; //1st node
  }
  else // elsewhere in the list
head->next = remove_match(head->next,match);
}
```

return head;

head = remove_match(head, "3");

First time the function is called.



Alternative: Passing by Pointer (simulates pass by reference)

```
void remove_match(node** head, char match[])
{
    node * temp;
    //case 1 - empty list OR no match
if( *head == NULL) //if (!head)
      return;

    //case 2 - found a match!
    if (strcmp(                , match) == 0)
    {
          temp = *head; //node to remove
          head = (*head)->next;
          delete [] temp->name; //dyn. mem
          delete temp; //1st node
    }
    else // elsewhere in the list
     remove_match(head->next,match);
}
```

"head" is a pointer to a pointer to a node

(*head)->name

&(*head)->next

Address-of operator

remove_match(&head, "3");

this is how you call the function the first time