

## SAMPLE PROGRAMS WITH STRINGS

### “PATTERN MATCHING”

1. Write a function to find the **position of the first occurrence of a given string** in a sentence if it exists, otherwise returns -1.

```
int findFirstOccSub(char *sent, char *sub)
{
    int    k,
           sentlen = strlen(sent),
           wordlen = strlen(sub);
    // Traverse sentence
    for (k = 0; k <= sentlen - wordlen; k++)
    {
        /* Compare sub with len2 characters of sent,
           starting from the kth position, to see if they are equal */
        if (strncmp(sent + k, sub, wordlen) == 0)
            return k;
    }
    /* Return -1 if s2 is not found in s1 */
    return -1;
}

//main
position = findFirstOccSub(givensent, givensub);
```

2. Write a function to find the **position of the first occurrence of a given WORD** in a sentence if it exists, otherwise returns -1.

```
int findFirstOccWord(char *sent, char *word)
{
    int    k, sentlen = strlen(sent),
           wordlen = strlen(word);
    // Traverse sentence
    for (k = 0; k <= sentlen - wordlen; k++)
    {
        //Find the first word
        if (strncmp(sent + k, word, wordlen) == 0 &&
            (k == 0 || sent[k - 1] == ' ') &&
            (k == sentlen - wordlen || sent[k + wordlen] == ' '))
            return k;
    }
    /* Return -1 if word is not found in sent */
    return -1;
}

//main
position = findFirstOccWord(givensent, givenword);
```

3. Write a function to delete the first occurrence of a given word

```
void deleteFirstOccWord(char *sent, char *word)
{
    char before[SIZE] = "", after[SIZE] = "";
    int sentlen = strlen(sent), wordlen = strlen(word);
    int pos = findFirstOccWord(sent, word);

    //take the part of the string BEFORE the given word
    strncpy(before, sent, pos);

    //take the part of the string AFTER the given word
    strcpy(after, sent + pos + wordlen);

    strcpy(sent, before);
    strcat(sent, after);
}

//main
deleteFirstOccWord(givensent, givensub, position);
```

---

```
void deleteFirstOccWord_ver2(char *sent, char *word)
{
    int sentlen = strlen(sent),
        wordlen = strlen(word),
        pos = findFirstOccWord(sent, word);
    strcpy(sent+pos, sent+pos+wordlen);
}
```

---

4. Write a function to replace the first occurrence of a given word with the given word.

```
void replaceFirstOccWord(char *sent, char *word, char *rep)
{
    char before[SIZE] = "", after[SIZE] = "";
    int  sentlen = strlen(sent), wordlen = strlen(word);
    int  pos = findFirstOccWord(sent, word);
    //take the part of the string BEFORE the given word
    strncpy(before, sent, pos);

    //insert the given word
    strcat(before, rep);

    //take the part of the string AFTER the given word
    strcpy(after, sent + pos + wordlen);

    strcpy(sent, before);
    strcat(sent, after);
}

//main
replaceFirstOccWord(givensent, givensub, repwith, position);
```

---

```
void replaceFirstOccWord_ver2(char *sent, char *word, char *rep)
{
    char  after[SIZE] = "";
    int   wordlen = strlen(word),
        pos = findFirstOccWord(sent, word);
    strcpy(after, sent + pos + wordlen);
    strcpy(sent+pos, rep);
    strcat(sent, after);
}
```

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5. Write a function to find the **position of all occurrences of a given string** in a sentence if it exists.

```
int findAllSub(char *sent, char *sub, int occ[])
{
    int k,
        sentlen = strlen(sent),
        sublen = strlen(sub),
        i = 0;
    // Traverse sentence
    for (k = 0; k <= sentlen - sublen; k++)
    {
        /* Compare sub with sublen char. of sent, starting from the kth
           position, to see if they are equal */
        if (strncmp(sent + k, sub, sublen) == 0)
            occ[i++] = k;
    }
    /* Return 0 if sub is not found in sent */
    return i;
}

//main
int posarray[10];
int size = findAllSub(givensent, givensub, posarray);
```

6. Write a function to **delete all occurrences of a given string** in a sentence and finds the new sentence.

```
void delAllOcc(char *sent, char *sub)
{
    char before[SIZE] = "", after[SIZE] = "";
    int sublen = strlen(sub), pos;
    pos = findFirstOccSub(sent, sub);
    while (pos != -1) {
        strncpy(before, sent, pos);
        strcpy(after, sent + pos + sublen);
        strcpy(sent, before);
        strcat(sent, after);
        pos = findFirstOccSub(sent, sub);
    }
}

//main
delAllOcc(givensent, givensub);
```

---

```
void delAllOcc_ver2(char *sent, char *sub)
{
    int sublen = strlen(sub), pos;
    pos = findFirstOccSub(sent, sub);
    while (pos != -1) {
        strcpy(sent+pos, sent + pos + sublen);
        pos = findFirstOccSub(sent, sub);
    }
}
```