```c
/**
 * Return an array of arrays of size *returnSize.
 * The sizes of the arrays are returned as *returnColumnSizes array.
 * Note: Both returned array and *columnSizes array must be malloced, assume caller calls free().
 */
#define TOTAL_LETTER_COUNT          (26)

struct group {
    int* letter_map;
    struct group* next;
    struct node* list;
    int letter_count;
    int count;
};

struct group_head {
    int next;
    struct group* group;
};

struct node {
    char* text;
    struct node* next;
};

void resetGrouphead(struct group_head* mem, int length)
{
    int index;

    for(index = 0; index < length; index++)
    {
        mem[index].next = INT_MIN;
        mem[index].group = NULL;
    }
}

struct group* createGroup(int letter_count, struct node* list, int* letter_map)
{
    struct group* group;

    group = (struct group*)malloc(sizeof(struct group));
    group->letter_count = letter_count;
    group->list = list;
    group->letter_map = letter_map;
    group->count = 1;
    group->next = NULL;
    return group;
}


#define ALLOC_LENGTH    (2)

char*** groupAnagrams(char** strs, int strsSize, int* returnSize, int** returnColumnSizes) {
    char*** result;
    char** list;
    struct group_head* num_map;
    int* letter_map;
    int last_head;
    int first_head;
    struct node* tmp_node;
    struct group* group;
    int index;
    int str_index;
    int alloc_length;
    int str_count;
    int letter_count;
    int letter_index;

    alloc_length = ALLOC_LENGTH;
    *returnColumnSizes = (int*)malloc(sizeof(int)*strsSize);
    num_map = (struct group_head*)malloc(sizeof(struct group_head)*(alloc_length+1));
    resetGrouphead(num_map,alloc_length+1);
    tmp_node = (struct node*)malloc(sizeof(struct node)*strsSize);

    last_head = INT_MIN;
    first_head = INT_MIN;
    *returnSize = 0;
    letter_map = NULL;

    for(index = 0; index < strsSize; index++)
    {
        str_index = 0;
        str_count = 0;
        letter_count = 0;
        tmp_node[index].text = strs[index];
        tmp_node[index].next = NULL;

        if(letter_map == NULL)
        {
            letter_map = (int*)calloc(TOTAL_LETTER_COUNT, sizeof(int));
        }else
        {
            free(letter_map);
            letter_map = (int*)calloc(TOTAL_LETTER_COUNT, sizeof(int));
        }

        //memset(letter_map, 0x0, sizeof(int)*TOTAL_LETTER_COUNT);
```

```
    while(strs[index][str_index] != '\0')
    {
        str_count += strs[index][str_index] - 'a' + 1;
        letter_map[strs[index][str_index] - 'a']++;
        str_index++;
    }

    //printf("s:[%s], str_count:[%d], alloc_length:[%d]\n", strs[index], str_count, alloc_length);


    if(str_count > alloc_length)
    {
        num_map = (struct group_head*)realloc(num_map,sizeof(struct group_head)*(str_count*2+1));
        resetGrouphead(&num_map[alloc_length+1],str_count*2-alloc_length);
        alloc_length = str_count*2;
    }

    if(num_map[str_count].group == NULL)
    {
        (*returnSize)++;
        group = createGroup(str_index, &tmp_node[index], letter_map);
        //printf("Add group:[0x%x], tmp_node:[0x%x]\n", group, &tmp_node[index]);

        num_map[str_count].group = group;

        if(first_head == INT_MIN)
        {
            first_head = str_count;
        }

        if(last_head != INT_MIN && last_head != str_count)
        {
            num_map[last_head].next = str_count;
        }

        last_head = str_count;
        letter_map = NULL;
    }else
    {
        group = num_map[str_count].group;
        //printf("Search group:[0x%x]\n", group);
        while(group)
        {
            letter_index = 0;

            if(group->letter_count == str_index)
            {
                while(letter_index < TOTAL_LETTER_COUNT)
                {
                    if(letter_map[letter_index] != group->letter_map[letter_index])
                    {
                        break;
                    }
                    letter_index++;
                }
            }

            if(letter_index == TOTAL_LETTER_COUNT)
            {

                group->count++;
                tmp_node[index].next = group->list;
                group->list = &tmp_node[index];
                break;
            }

            group = group->next;
        }

        if(group == NULL)
        {
            (*returnSize)++;
            group = createGroup(str_index, &tmp_node[index], letter_map);
            group->next = num_map[str_count].group;
            num_map[str_count].group = group;
            letter_map = NULL;
        }
    }

}

result = (char***)malloc(sizeof(char**)*(*returnSize));
index = 0;
//printf("first_head:[%d], total_count:[%d]\n", first_head, *returnSize);
while(first_head != INT_MIN)
{
    //printf("first_head:[%d], next:[%d]\n", first_head, num_map[first_head].next);
    group = num_map[first_head].group;

    while(group)
    {
        //printf("Index:[%d], list:[0x%x], group count:[%d]\n", index, group->list, group->count);
        list = (char**)malloc(sizeof(char*)*group->count);
        result[index] = list;
        //printf("xxxxxxx\n");
        (*returnColumnSizes)[index] = group->count;
```

```
            tmp_node = group->list;

            for(str_index = 0; str_index < group->count; str_index++)
            {
                list[str_index] = tmp_node->text;
                //printf("str_index:[%d], s:[%s]\n", str_index, tmp_node->text);
                tmp_node = tmp_node->next;

            }
            //printf("xxx\n");
            group = group->next;
            index++;
        }

        first_head = num_map[first_head].next;
    }

    //printf("done\n");

    return result;

}
```