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1.Consider two students reading the word. The first student reads from left to right and the second student was reads from right to left. After reading both the student spelled out the same word. Develop an application (C Program) to simulate the above situation using suitable data structure.

SOURCE CODE:

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#define MAX 50

int top = -1, front = 0;
int stack[MAX];
void push(char);
void pop();

void main()
{
   int i, choice;
   char s[MAX], b;
   while (1)
   {
      printf("1-Enter string\n2-Exit\n");
      printf("Enter your choice\n");
      scanf("%d", &choice);
      switch (choice)
      {
      case 1:
         printf("Enter the String\n");
         scanf("%s", s);
         for (i = 0;s[i] != '\0';i++)
         {
            b = s[i];
            push(b);
         }
         for (i = 0;i < (strlen(s) / 2);i++)
         {
            if (stack[top] == stack[front])
            {
               pop();
               front++;
            }
            else
            {
               printf("Both the student spelled out different word.\n");
               break;
            }
         }
         if ((strlen(s) / 2)==front)
            printf("Both the student spelled out the same word: %s\n",s);
         front = 0;
         top = -1;
         break;
      case 2:
```

```
            exit(0);
        default:
            printf("Enter correct choice\n");
        }
    }
}


void push(char a)
{
   top++;
   stack[top] = a;
}


void pop()
{
   top--;
}
```

OUTPUT:

```
1-Enter string
2-Exit
Enter your choice
1
Enter the String
madam
Both the student spelled out the same word: madam
1-Enter string
2-Exit
Enter your choice
1
Enter the String
hello
Both the student spelled out different word.
1-Enter string
2-Exit
Enter your choice
3
Enter correct choice
1-Enter string
2-Exit
Enter your choice
2

Process returned 0 (0x0)   execution time : 26.086 s
Press any key to continue.
```

2.An Application is to be developed to manage the records of the candidates who register for the NPTEL online course. The NPTEL has planned to conduct the course for 250 candidates on First Come First Serve course registration basis. Once all the 250 candidates are registered the message should be displayed as “Registration Closed” and no student is allowed to leave the course until the completion. Identify the suitable data structureand develop an application(C Program) for the above scenario.

SOURCE CODE:

```
#include<stdio.h>
#include<process.h>
#define QUE_SIZE 250
int item;int front=0,rear=-1;
int q[250];
void insertrear()
{

   if(rear==QUE_SIZE-1)
   {
      printf("Registration Closed\n");
      return ;
   }
   rear=rear+1;
   q[rear]=item;
   printf("Registered successfully\n");
}
void displayQ()
{
   int i;
   if(front>rear)
   {
      printf("No registrations yet\n");
      return ;
   }
   printf("Details(Roll numbers) of registered students:\n");
   for(i=front;i<=rear;i++)
   {
      printf("%d\n",q[i]);
   }
}
void main()
{
   int choice;
   for(;;)
   {
      printf("\n1:Register now\n2:Details of registered students\n3:Exit\n");
      printf("Enter the choice\n");
      scanf("%d",&choice);
      switch(choice)
      {
         case 1:printf("Enter your roll number\n");
         scanf("%d",&item);
         insertrear();
         break;
         case 2:displayQ();
```

```
            break;
            case 3:exit(0);
            default:printf("Invalid choice\n");
        }
    }
}
```

OUTPUT:

```
1:Register now
2:Details of registered students
3:Exit
Enter the choice
2
No registrations yet

1:Register now
2:Details of registered students
3:Exit
Enter the choice
1
Enter your roll number
123
Registered successfully

1:Register now
2:Details of registered students
3:Exit
Enter the choice
1
Enter your roll number
125
Registered successfully

1:Register now
2:Details of registered students
3:Exit
Enter the choice
2
Details(Roll numbers) of registered students:
123
125
```