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Reg_no – 2020BIT037

Assignment N0 – 1

1) Stack

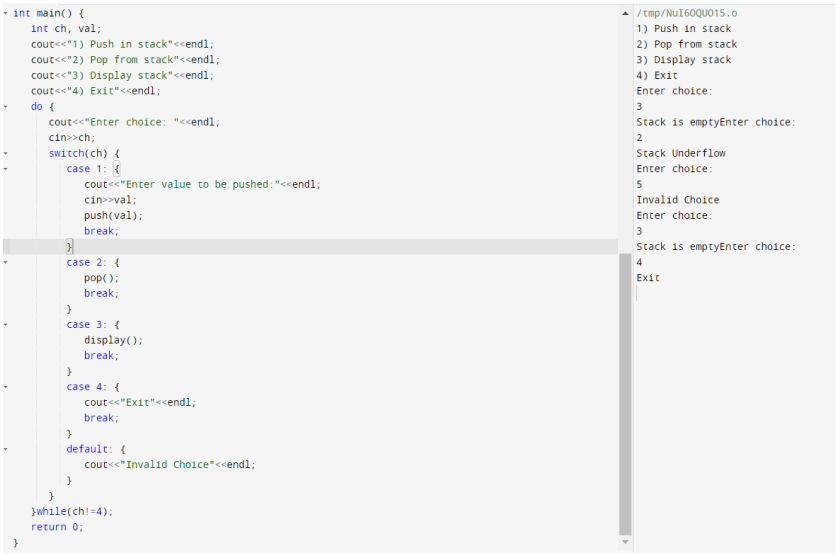
```
// program using stack
#include <iostream>
using namespace std;
int stack[100], n=100, top=-1;
void push(int val) {
  if(top>=n-1)
  cout<<"Stack Overflow"<<endl;
  else {
    top++;
    stack[top]=val;
  }
}
void pop() {
  if(top<=-1)
  cout<<"Stack Underflow"<<endl;
  else {
    cout<<"The popped element is "<< stack[top]
<<endl;
    top--;
  }
}
void display() {
```

```
  if(top>=0) {
    cout<<"Stack elements are:";
    for(int i=top; i>=0; i--)
    cout<<stack[i]<<" ";
    cout<<endl;
  } else
  cout<<"Stack is empty";
}
int main() {
  int ch, val;
  cout<<"1) Push in stack"<<endl;
  cout<<"2) Pop from stack"<<endl;
  cout<<"3) Display stack"<<endl;
  cout<<"4) Exit"<<endl;
  do {
    cout<<"Enter choice: "<<endl;
    cin>>ch;
    switch(ch) {
      case 1: {
        cout<<"Enter value to be pushed:"<<endl;
        cin>>val;
        push(val);
        break;
      }
      case 2: {
        pop();
        break;
      }
      case 3: {
        display();
        break;
      }
      case 4: {
        cout<<"Exit"<<endl;
        break;
```

```
      }
      default: {
        cout<<"Invalid Choice"<<endl;
      }
    }
  }while(ch!=4);
  return 0;
}
```

main.cpp

```
// program using stack
#include <iostream>
using namespace std;
int stack[100], n=100, top=-1;
void push(int val) {
   if(top>=n-1)
   cout<<"Stack Overflow"<<endl;
   else {
      top++;
      stack[top]=val;
   }
}
void pop() {
   if(top<=-1)
   cout<<"Stack Underflow"<<endl;
   else {
      cout<<"The popped element is "<< stack[top] <<endl;
      top--;
   }
}
void display() {
   if(top>=0) {
      cout<<"Stack elements are:";
      for(int i=top; i>=0; i--)
      cout<<stack[i]<<" ";
      cout<<endl;
   } else
   cout<<"Stack is empty";
}
int main() {
   int ch, val;
   cout<<"1) Push in stack"<<endl;
   cout<<"2) Pop from stack"<<endl;
   cout<<"3) Display stack"<<endl;
   cout<<"4) Exit"<<endl;
```



```
int main() {
    int ch, val;
    cout<<"1) Push in stack"<<endl;
    cout<<"2) Pop from stack"<<endl;
    cout<<"3) Display stack"<<endl;
    cout<<"4) Exit"<<endl;
    do {
       cout<<"Enter choice: "<<endl;
       cin>>ch;
       switch(ch) {
          case 1: {
             cout<<"Enter value to be pushed:"<<endl;
             cin>>val;
             push(val);
             break;
          }
          case 2: {
             pop();
             break;
          }
          case 3: {
             display();
             break;
          }
          case 4: {
             cout<<"Exit"<<endl;
             break;
          }
          default: {
             cout<<"Invalid Choice"<<endl;
          }
       }
    }while(ch!=4);
    return 0;
}
```

```
/tmp/NuI6OQUO15.o
1) Push in stack
2) Pop from stack
3) Display stack
4) Exit
Enter choice:
3
Stack is emptyEnter choice:
2
Stack Underflow
Enter choice:
5
Invalid Choice
Enter choice:
3
Stack is emptyEnter choice:
4
Exit
```

2) Queue

```
// program using queue
#include <iostream>
using namespace std;
int queue[100], n = 100, front = - 1, rear = - 1;
void Insert() {
  int val;
  if (rear == n - 1)
  cout<<"Queue Overflow"<<endl;
  else {
    if (front == - 1)
    front = 0;
    cout<<"Insert the element in queue : "<<endl;
    cin>>val;
    rear++;
    queue[rear] = val;
  }
}
void Delete() {
```

```
  if (front == - 1 || front > rear) {
    cout<<"Queue Underflow ";
    return ;
  } else {
    cout<<"Element deleted from queue is : "<<
queue[front] <<endl;
    front++;;
  }
}
void Display() {
  if (front == - 1)
  cout<<"Queue is empty"<<endl;
  else {
    cout<<"Queue elements are : ";
    for (int i = front; i <= rear; i++)
    cout<<queue[i]<<" ";
      cout<<endl;
  }
}
int main() {
  int ch;
  cout<<"1) Insert element to queue"<<endl;
  cout<<"2) Delete element from queue"<<endl;
  cout<<"3) Display all the elements of queue"<<endl;
  cout<<"4) Exit"<<endl;
  do {
    cout<<"Enter your choice : "<<endl;
    cin>>ch;
    switch (ch) {
      case 1: Insert();
      break;
      case 2: Delete();
      break;
      case 3: Display();
      break;
```

```
        case 4: cout<<"Exit"<<endl;
        break;
        default: cout<<"Invalid choice"<<endl;
      }
   } while(ch!=4);
   return 0;
}
```

main.cpp

```
// program using queue
#include <iostream>
using namespace std;
int queue[100], n = 100, front = - 1, rear = - 1;
void Insert() {
   int val;
   if (rear == n - 1)
   cout<<"Queue Overflow"<<endl;
   else {
      if (front == - 1)
      front = 0;
      cout<<"Insert the element in queue : "<<endl;
      cin>>val;
      rear++;
      queue[rear] = val;
   }
}
void Delete() {
   if (front == - 1 || front > rear) {
      cout<<"Queue Underflow ";
      return ;
   } else {
      cout<<"Element deleted from queue is : "<< queue[front] <<endl;
      front++;;
   }
}
void Display() {
   if (front == - 1)
   cout<<"Queue is empty"<<endl;
   else {
      cout<<"Queue elements are : ";
      for (int i = front; i <= rear; i++)
      cout<<queue[i]<<" ";
         cout<<endl;
   }
```

```
void Display() {
   if (front == - 1)
   cout<<"Queue is empty"<<endl;
   else {
      cout<<"Queue elements are : ";
      for (int i = front; i <= rear; i++)
      cout<<queue[i]<<" ";
         cout<<endl;
   }
}
int main() {
   int ch;
   cout<<"1) Insert element to queue"<<endl;
   cout<<"2) Delete element from queue"<<endl;
   cout<<"3) Display all the elements of queue"<<endl;
   cout<<"4) Exit"<<endl;
   do {
      cout<<"Enter your choice : "<<endl;
      cin>>ch;
      switch (ch) {
         case 1: Insert();
         break;
         case 2: Delete();
         break;
         case 3: Display();
         break;
         case 4: cout<<"Exit"<<endl;
         break;
         default: cout<<"Invalid choice"<<endl;
      }
   } while(ch!=4);
   return 0;
}
```

```
1) Insert element to queue
2) Delete element from queue
3) Display all the elements of queue
4) Exit
Enter your choice :
3
Queue is empty
Enter your choice :
4
Exit
```