BCSE307P – Compiler Design Lab

Winter Semester 2023-24

Assessment 7

Implementation of Stack

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Slot: L7 + L8

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Task 1:

Implementation of Stack

Code:

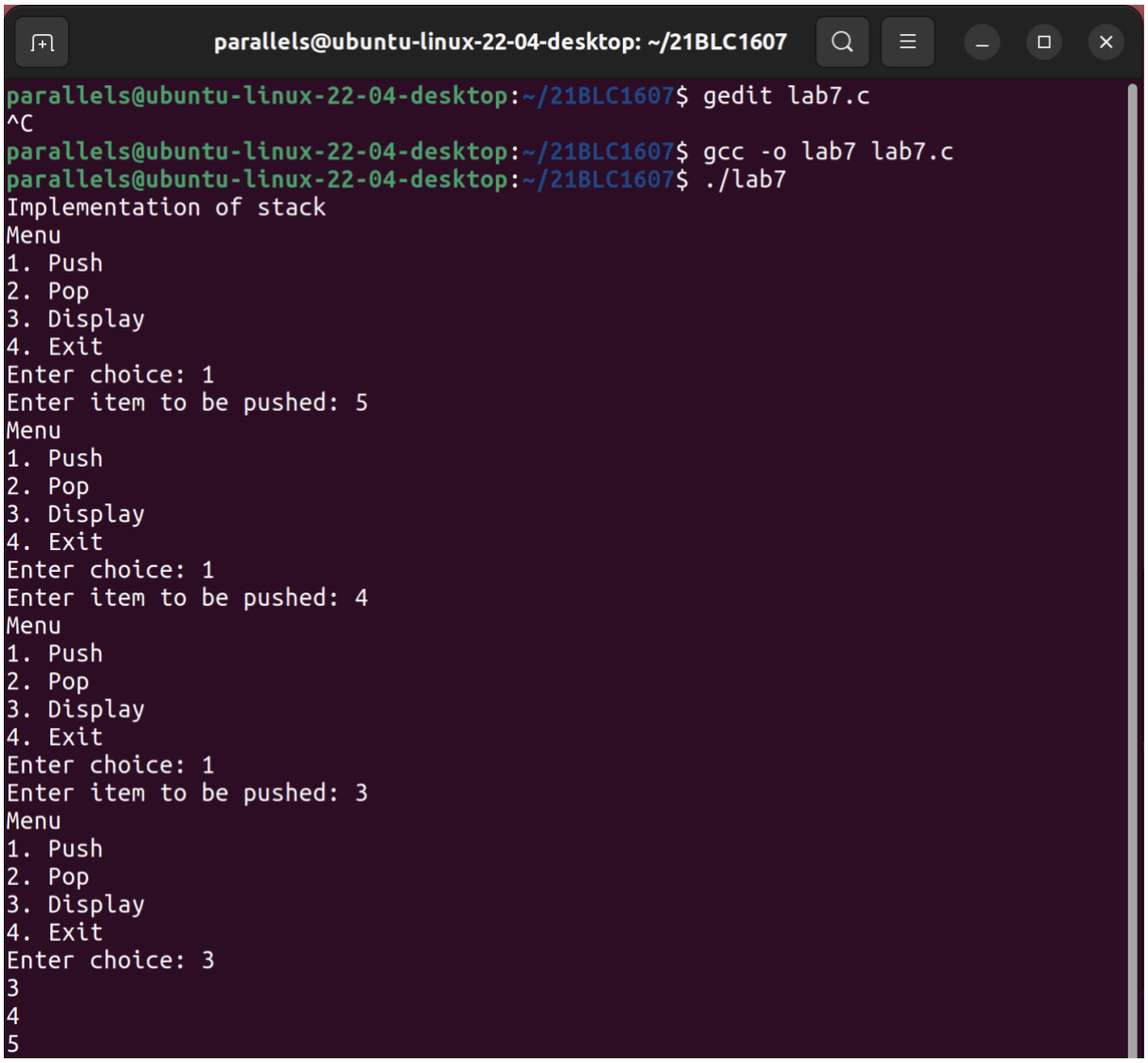
```
#include <stdio.h>
#include <stdlib.h>
#define size 5

struct stack {
	int s[size];
	int top;
} st;

int stfull() {
	if (st.top >= size-1) {
		return 1;
	}
	else {
		return 0;
	}
}
void push(int item)
{
	st.top++;
	st.s[st.top] = item;
}
```

```
int stempty() {
	if (st.top == -1) {
		return 1;
	}
	else {
		return 0;
	}
}



int pop() {
	int item;
	item = st.s[st.top];
	st.top--;
	return item;
}


void display() {
	int i;
	if (stempty()) {
		printf("Stack is Empty\n");
	}
	else {
		for(i = st.top; i >= 0; i--) {
			printf("%d\n", st.s[i]);
		}
```

```
	}
}

int main() {
	int item, choice;
	// char *ans = "y";
	char ans = 'y';
	st.top = -1;
	printf("Implementation of stack\n");
	do {
		printf("Menu\n");
		printf("1. Push\n2. Pop\n3. Display\n4. Exit\n");
		printf("Enter choice: ");
		scanf("%d", &choice);
		switch (choice) {
			case 1:
				printf("Enter item to be pushed: ");
				scanf("%d", &item);
				if (stfull()) {
					printf("Stack is full\n");
				}
				else {
					push(item);
				}
				break;
			case 2:
```

```
                        if (stempty()) {
                              printf("Empty stack! Underflow !!\n");
                        }
                        else {
                              item = pop();
                              printf("Popped element is %d\n", item);
                        }
                        break;
                  case 3:
                        display();
                        break;
                  case 4:
                        goto halt;
                        // break;
            }
            // printf("Do you want to continue ?");
            // scanf("%c", &ans);
            // fgets(ans, 3, stdin);

      } while (1);
      halt: return 0;

}
```

Output:


parallels@ubuntu-linux-22-04-desktop: ~/21BLC1607
parallels@ubuntu-linux-22-04-desktop:~/21BLC1607$ gedit lab7.c
^C
parallels@ubuntu-linux-22-04-desktop:~/21BLC1607$ gcc -o lab7 lab7.c
parallels@ubuntu-linux-22-04-desktop:~/21BLC1607$ ./lab7
Implementation of stack
Menu
1. Push
2. Pop
3. Display
4. Exit
Enter choice: 1
Enter item to be pushed: 5
Menu
1. Push
2. Pop
3. Display
4. Exit
Enter choice: 1
Enter item to be pushed: 4
Menu
1. Push
2. Pop
3. Display
4. Exit
Enter choice: 1
Enter item to be pushed: 3
Menu
1. Push
2. Pop
3. Display
4. Exit
Enter choice: 3
3
4
5

Result:

Thus, the experiment has been successfully executed and verified.