```
#include "stack4.h"
#include <stdlib.h>
#include <assert.h>

typedef struct list *list;

struct list
{
  void *element;
  list next;
};

list
cons(void *element, list l)
{
  list temp = malloc(sizeof(struct list));
  temp -> element = element;
  temp -> next = l;
  return temp;
}

struct stack
{
  list elements;
};

stack
stack_create(void)
{
  stack temp = malloc(sizeof(struct stack));
  temp -> elements = NULL;
  return temp;
}
```

```
void
stack_push(stack s, void *element)
{
  s -> elements = cons(element, s -> elements);
}

int
stack_empty(stack s)
{
  return s -> elements == NULL;
}

void
stack_pop(stack s)
{
  list temp = s -> elements;
  assert(!stack_empty(s));
  s -> elements = temp -> next;
  free(temp);
}

void *
stack_top(stack s)
{
  assert(!stack_empty(s));
  return s -> elements -> element;
}
```