EUROPEAN UNIVERSITY OF LEFKE
Faculty of Engineering
Department of Software Engineering

COMP 217

DATA STRUCTURES

Lab Work No. 6

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Code :

```c
#include <stdio.h>
struct node {
int info;
struct node* next;
};

typedef struct node Node;
typedef Node* NodePtr;

typedef struct {
    NodePtr top;
} stack;

NodePtr get_node(void) {
NodePtr p;
p = (NodePtr)malloc(sizeof(Node));
if(p == NULL) {
printf("Error: memory allocation failed!\n");
exit(1);
}
return p;
}

void free_node(NodePtr p) {
    if(p != NULL)
    free(p);
}

void push(stack *s, int data) {
    NodePtr q = get_node();
    q->info = data;
    q->next = s->top;
    s->top = q;
}

int pop(stack *s) {
    NodePtr q = s->top;
    if(s->top == NULL) {
```

```
        printf("Error: stack is empty!\n");
        exit(1);
    }
    int data = s->top->info;
    s->top = q->next;
    free_node(q);
    return data;
}

int main(){
    stack binary;
    binary.top = NULL;
    int dec;
    printf("Enter a decimal number: ");
    scanf("%d", &dec);
    while(dec > 0) {
        push(&binary, dec % 2);
        dec /= 2;
    }
    printf("Binary representation: ");
    while(binary.top != NULL) {
        printf("%d", pop(&binary));
    }
    return 0;
}
```

Result :