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Kafrelsheikh University

Faculty of Engineering

Electrical Engineering Dept.

Year: 3rd Elec. (Computers & Systems)



Subject: Compilers

Date: 12 /1/2017 Time allowed: 3 hours Full Mark: 90

Final Term Exam

Answer as much as you can:

Question [1]: (35 marks)

- a) What is a compiler? State the compiler phases. Explain by diagram.
- b) What are the different kinds of errors encountered during compilation?
- c) What is the major stages in compilation?
- d) Define the following: Basic blocks and flow graphs.

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e) What is happen when applying the three address code on the following expression: Exp = (a+a*(b-c))+d*(b-c)

Question [2]: (35 marks)

a) Compile the following code (State step by step according to the compiler phases):

```
while (y < z) {
    int x = a + b;
    y += x;
}</pre>
```

- b) State the forms of three address instructions.
- c) State some examples of reported errors.
- d) What are the typical semantic errors?
- e) Why to separate Lexical analysis and parsing?

Question [3]: (20 marks)

a)

What is the output of the following C programs?

```
#include<stdio.h>
#include<stdlib.h>
void main()
{ int x, i,y=0;
```

for (i=0; i<5; i++)
{ x=rand()%10;
printf("==> %d\n", x); }

}

b)
 #include <stdio.h>
 void f1();

void f2(); void g();

void main()
{ int x = 0: f1(): g(): f2():

{ int x = 0; f1(); g(); f2(); } void f1() { int x = 10; g(); }

void f2() { int x = 20; f1(); g(); }
void g() { printf("x"); }