Quiz #2

[CS 120] High-level Programming I: The C Programming Language

DigiPen INSTITUTE OF TECHNOLOGY SINGAPORE

Goh Wei Zhe	weizhe.goh	081019	25 /100
Name	Student login	Date	Points

Notes: This is a short-answer, closed books quiz. Do not collaborate or copy other people's work. Please write legibly – I can give points only for correct, clear answers I am able to read.

1. Indicate the printout

Assume that `i`, `j`, and `k` are `int` variables. Show the output produced by each of the following program fragments. Write **NC** if the fragment cannot be compiled when included as a part in a larger, otherwise correct, program. *(5 marks each; 50 marks total)*

```
i=9; j=3;
printf("%d",k=i%j==2);
```

1

```
i=3; j=2; k=1;
printf("%d",i>j<k);
```

3 0

```
i=7; j=5;
printf("%d", !i<j);
```

7

```
i=2; j=2; k=6;
printf("%d", i++ >= j || i + j >= k;);
```

2

```
i=-2; j=5;
printf("%d", !!i+!j);
```

- 2

```
i=3; j=2; k=1;
printf("%d", i<j||k<j);
```

3

```
i=1; j=2; k=3;
printf("%d", (i=j)||(k=j));
printf("%d %d %d", i, j, k);
```

2 , 2 2 2

Q: where did you get this from?

```
i=10; j=10; k=10;
printf("%d",-i||--j&&--k);
printf("%d %d %d", i, j, k);
```

9 , 9 9 9

```
i=5;
k=i>5?i:-i;
printf("%d", k);
```

- 5

```
i=6;
switch (i%3) {
  case 0:  printf("0!");
  case 1:  printf("1!");
  default: printf("def");
}
```

falls through

0	!	1	!	d	e	f													

2. Write the statements

a) Assuming the expression statement below is correct, in the box underneath rewrite it using one or more *selection statements* to replace expressions with the *ternary operator. (15 marks)*

```
k = num > a ? (num <= b ? 100
: 200) : 300;
```

```
if(num > a)
{
  if(num <= b)
  {
    k = 100;
  }
  else
  {
    k = 200;
  }
}
else
{
  k = 300;
}
```

REPLACE TERNARY!

```
k = b => a ? b => a : 100 : 200 : 300 ;
```

Same?

b) Assuming the statements below are correct, in the box underneath rewrite them without using a `for` iteration statement. *(15 marks)*

```
sendData();
for (size=10; size>0; size=-2) {
      sendData();
}
```

```
int size = 10;
sendData();
while (size > 0)
{
  size -= 2;
  sendData();
}
```

15

c) Translate the following business requirements to a fragment of the C code. Assume that all needed functions and variables have already been defined; you need to organize them into appropriate statements and expressions. *(20 marks)*

"Retrieve the temperature as `unsigned int` from a sensor by calling the `getTemperature()` function. Then, for temperatures above 38 print out "Too hot!", for temperatures from above 35 to 38 (inclusive) print out "OK!", for temperatures 35 and below print out "Too cold!".

```
getTemperature (unsigned int t)
{
  if (t > 38)
  {
    printf ("Too hot!");
  }
  else if (t > 35 || t <= 38)
  {
    printf ("OK!");
  }
  else
  {
    printf ("Too cold!");
  }
  return t;
}
```

NOT NEEDED AND WRONG

5

```
unsigned temp = getTemperature();
if (temp > 38)
{
  printf("Too Hot!");
}
else if (temp > 35)
{
  printf("OK!");
}
else
{
  printf("Too Cold!");
}
```

End of quiz.

20