UTHM

Universiti Tun Hussein Onn Malaysia

# UNIVERSITI TUN HUSSEIN ONN MALAYSIA

## FINAL EXAMINATION
## SEMESTER II
## SESSION 2017/2018

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| COURSE NAME | : | C++ PROGRAMMING |
| COURSE CODE | : | BWB 10203 |
| PROGRAMME CODE | : | BWQ |
| EXAMINATION DATE | : | JUNE/JULY 2018 |
| DURATION | : | 3 HOURS |
| INSTRUCTION | : | ANSWER **ALL** QUESTIONS |

THIS QUESTION PAPER CONSISTS OF **SIX (6)** PAGES

**Q1** State whether the following statements are **TRUE** or **FALSE** and explain your answer.

(a) `rint` and `random` are not the function in C++.

(3 marks)

(b) We can use `setprecision(n)` to set the width of a print field.

(3 marks)

(c) When you invoke a function with a parameter, the value of the argument is passed to the parameter. This is referred to as `call by parameter`.

(3 marks)

(d) Every element in an array may contained different data type.

(3 marks)

(e) When you pass an array to a function, a copy of the array is passed to the array parameter in the function.

(3 marks)

(f) The following statement is correct.

```
char charArray[2][] = {{'a', 'b'}, {'c', 'd'}};
```

(3 marks)

(g) A sentinel-controlled `while` loop is an event-controlled `while` loop whose termination depends on a special value.

(3 marks)

(h) The `break` statement is required in the default case of a switch selection statement to exit the switch properly.

(3 marks)

(i) In C++, the names of the corresponding formal and actual parameters must be the same.

(3 marks)

(j) Given the declaration:

```
int list[10];
the statement:
list[5] = list[3] + list[?];
```

updates the content of the fifth component of the array list.

(3 marks)

**Q2** (a) Analyse and elaborate the following codes/statements. Explain in details what does it do.

(i) Given following syntax,

```
bool even = false;
if (even = true)
{
  cout << "It is even!";
}
```

Output:
The program runs, but displays nothing.

(2 marks)

(ii) Given following syntax,

```
if (x < 100) && (x > 10)
cout << "x is between 10 and 100" << endl;
```

(2 marks)

(iii) Given following syntax,

```
double sum = 0;
double d = 0;
while (d != 10.0)
{
  d += 0.1;
  sum += sum + d;
}
```



(2 marks)

(iv) Given following syntax,

```
while (n<=100)
sum += n*n;
```

(2 marks)

(v) Given following syntax,

```
int f (int a, int b=0, int c);
```

(2 marks)

(b) Determine the output of the following expression.

```
true || true && false
```

(2 marks)

(c) How can a loop be structured so that it terminates with a statement in the middle of its block?

(2 marks)

(d) Analyse and compare the following two statements:

```
if (n>2) { if (n<6) cout<<"OK"; } else cout<<"NG";

if (n>2) { if (n<6) cout<<"OK";  else cout<<"NG";}
```

(4 marks)

(e) How is the following expression evaluated?

```
(x < y ? -1 : ( x == y ? 0 : 1));
```

(2 marks)

**Q3** (a) Write a program that prompts the user to enter an integer and displays the sum of all its digits. The program must contains a function that computes the average of the digits in an integer. Use the following function header:

```
double averageDigits(int n)
```

Here is the sample output:

```
Enter an integer : 768
The sum of digits for 768 is 21
```

(10 marks)



(b) Write a function called `circlearea()` that finds the area of a circle. It should take an argument of type float and return an argument of the same type. Write a `main()` function that gets a radius value from the user, calls `circlearea()`, and displays the result.

(7 marks)

(c) Write one or more statements that perform the following tasks for an array called `fractions`:

(i) Define a constant integer variable `arraySize` then initialized to 10.

(2 marks)

(ii) Declare an array with `arraySize` elements of type double, and initialize the elements to 0.

(2 marks)

(iii) Print array elements 6 and 9 with two digits of precision to the right of the decimal point.

(2 marks)

(iv) Print all the array elements using a `for` statement. Define the integer variable `i` as a control variable for the loop.

(2 marks)

**Q4** Consider the following function prototype

```
int test(int, char, double, int);
double two(double, double);
char three(int, int, char, double);
```

(a) Identify the number of parameters for user-defined functions `test`, `two`, `three`.

(3 marks)

(b) Classify the type of user-defined functions `test`, `two`, `three`.

(3 marks)

(c) Sketch a C++ statement that prints the value returned by the function `test` with the actual parameters 5, 5, 7.3 and 'z'.

(3 marks)

(d) Design a C++ statement that prints the value returned by function `two` with the actual parameters 17.5 and 18.3, respectively.

(3 marks)

(e) Propose a C++ statement that prints the next character returned by function `three`. (Use your own actual parameters).

(3 marks)

**Q5** Refer the following C++ code below:

```
1.   #include<iostream>
2.   using namspace std;
3.   int main()
4.   {
5.   int staff;
6.   int workhr;
7.   double rathr, salary;
8.   staff_no=1;
9.
10.  cout<<"Enter working hour and rate per hour: "
11.  workhr<<rather<<cin;
12.  salary=workhr*ratehr;
13.
14.  cout<<"Salary is: RM "<<salary<<endl;
15.  staff_no = staff_no-1;
16.  } while(staff_no<5)
17.
18.  Return 0 ;
19.  }
```

(a) Rewrite the conditional selection command so that it will allow **EXACTLY** ten staffs to calculate their salary.

(2 marks)

(b) Design a function definition, function prototype and function call that will used to calculate salary named `Cal_Salary`. Then, write `cout` syntax to display the calculated salary.



(8 marks)

– **END OF QUESTIONS** –