

EXAM GROUP A

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Student ID

Use the below program to answer next 2 questions.

```
int days_in_feb(int y) {
    if(y % 100 == 0) return 28;
    if(y % 4 == 0) return 29;
    return 28;
}
int dyear ( int day , int month, int year
){
    int day_of_year ;
    day_of_year = day ;
    for( ; month > 0; month--)
        switch ( month ) {
            case 11: case 9 :
            case 6: case 4 :
                day_of_year += 30; break;
            case 10: case 8 :
            case 7: case 5 :
            case 3: case 1 :
                day_of_year += 31; break;
            case 2:
                day_of_year += days_in_feb( year
);
        }
    return day_of_year ;
}
```

1. What is the value returned by dyear(1,3,2009)?

- a) 1 b) 32 c) 60 d) 91 e) 30

2. There is an error in this program. Which of the below corrections would fix this error?

- a) switch (month) switch(month-1)
 b) for(; (month-1)>0; month--) for(; (month-1) > 0;)
 c) return 28 return ((month==2)? 28:29)
 d) switch (month) switch(month+1)
 e) There is no error.

3. What is the value of "y" after below code segment is executed?

```
int x1 = 7, x2 = 10, x3 = 8.1, y ;
y = x3>x1 - x2<=10 ;
```

- a) 0
 b) 1
 c) 1.0
 d) 0.0
 e) Invalid assignment

4. What is the output of the below code?

```
#include <stdio.h>
int fun (int ix){
    ix = ix * 2 ;
    printf ("%d " , ix);
    return ix ;
}
int main (void)
{ int x = 3 ;
  printf ("%d ", x);
  printf ("%d\n", fun(x));
  return 0 ;
}
```

- a) 3 6 6
 b) 3 3 3
 c) 3 6 3
 d) 3 6 9
 e) 3 3 6

5. What is the output of the below program with input "3"

```
#include<stdio.h>
int fonksiyon ( int gln ) {
    if( gln <= 1 )
        return 1;
    else
        return (gln*fonksiyon(gln- 1));
}
int main ( void ) {
    int k,N,f;
    puts("Enter an integer: ");
    scanf ( " %d " , &N );
    f= fonksiyon(N);
    printf("Result is=%d\n", f );
    return 0 ;
}
```

a) 1 b) 2 c) 3 d) 4 e)5

6. What is the mistake in the below switch statement?

```
double a= 1.25;
switch(a){
case 1.1: case 1.2:
    x= x*x; y= x; break;
case 1.3: y= x*x;
case 2.1: case 3.3:
    y= sqrt(x); break;
case 3.5: printf("Error "); break;
default: y= x+1;
```

- a) "case 1.3" has no break
 b) "default" doesn't have "printf"
 c) "a = 1.25" is not matched.
 d) "switch" works only with integers
 e) "case 3.5" doesn't need "break"

7. How can you code the below condition in C?

"x and y are both greater than z"

- a) a) $x > z \ \&\& \ y > z$
- b) b) $x \ \&\& \ y > z$
- c) c) $(x \ \&\& \ y) > z$
- d) d) $(x \ || \ z) > z$
- e) e) $x > z \ || \ y > z$

8. If a=1 and b=20 what is the output of the below code segment?

```
if(a=10){
    if(b == 20)
        printf("*** ");
}
else printf("*****");
```

- a) ***
- b) *****
- c) *** *****
- d) No Output is produced
- e) *****

9. What is the effect of the following code segment?

```
int i;
for (i=1; i < 21; i++)
    if (i%3 == 0)
        printf("%4d", i);
```

- a) It prints out the multiples of 3 from 3 to 21
- b) It prints out the multiples of 3 from 1 to 18
- c) It prints out the odd numbers from 3 to 18
- d) It prints out the multiples of 3 from 3 to 18
- e) It prints out the odd numbers from 3 to 21

10. What are the values of k and m after the following segment has been executed?

```
k=1;
for (m=2; m < 9; m += 2)
    k += 3;
```

- a) k=7 m=9
- b) k=9 m=9
- c) k=12 m=10
- d) k=13 m=9
- e) k=13 m=10

11. What is the output of the following program segment?

```
k=0;
do {
    printf("*");
    k++;
} while (k++ < 5);
```

- a) *
- b) **
- c) ***
- d) ****
- e) *****

12. How many lines are printed out after executed the following program segment?

```
for (i=0; i < 10; i += 2)
    for (j=8; j != 1; --j)
        for (k=3; k <= 6; k++)
            printf("*\n");
```

- a) 128
- b) 140
- c) 160
- d) 105
- e) 120

13. Which of the following expressions does the program segment below compute in F?

```
F=0;
for (i=2; i <= n; ++i) {
    term = i * (i - 1);
    F += term;
}
```

- a) $11 + 22 + 33 + 44 + \dots + nn$
- b) $1! + 2! + 3! + \dots + n!$
- c) $1 + 1(2 + 2(3 + 3(\dots + (n-1)((n-1)))) \dots)$
- d) $1*2 + 2*3 + 3*4 + \dots + (n-1)*n$
- e) $1+2+3 \dots + (n-1)+n$

14. What should be the condition in the do-while loop below, which allows to input pair of integers until it reaches a pair in which the first integer is multiple of the second?

```
do {
    scanf("%d%d", &a, &b);
} while (.....);
```

- a) $a \% b == 0$
- b) $a \% b != 2$
- c) $a \% b != 0$
- d) $a \% b == 2$
- e) $a != b \ \&\& \ a > b$

15. Let Y, Z, and S denote any C expressions. Then,

for (; Y; Z) S; is equivalent to:

- a) do { Z; if (Y) S } while (Y);
- b) do { S; Z; } while (!Y);
- c) do { if (Y) S; Z; } while (Y);
- d) if (Y) S; do { S; Z; } while (Y);
- e) do { S; Z; } while (Y); S;

16.What is the equivalent do-while re-implementation of the following program segment?

```
sum=0;
for (i=1; i<n; i++) {
    sum += i*3;
    if (i % 2) i++;
}
printf( "%5d\n" ,sum);
```

- a) `sum = 0; i=1; do { sum += i*3; i +=2; } while (i<n);`
- b) `sum = 0; i=0; do { sum += i*3; if (i %2 == 0) i++; } while (i<n);`
- c) `sum = 0; i=1; do { sum += i*3; if (i %2 == 1) i++; } while (i<n);`
- d) `sum = 0; i=0; do { sum += i*3; if (i %2 == 0) i +=2; } while (i<n);`
- e) `sum = 0; i=1; do { sum += i*3; if (i %2 == 1) i +=2; } while (i<=n);`

17.Which of the following program segments causes an infinite loop?

- a) `s=10; while (s--) printf("***);`
- b) `for (i=3; i!=10 ; i +=2) printf("***);`
- c) `x=0; do { x++; for (i=x;i<x*x;i++)`
`printf("***); } while (x<20);`
- d) `for (x=1; x!=10; ++x) for (y=x;y != -10; y--) printf("***);`
- e) `i=1; while (i > 10) { printf("***); i -=3; }`

18.What is the effect of the following program segment assuming that:

- Numbers is an array of integers of size n,
- The entries of the array Numbers are in increasing order (sorted).
- item, flag, ust, alt and i are integer variables.

```
flag=0;
alt=0;
ust=n-1;
i=(alt+ust)/2;
while (!flag && alt <=ust) {
    if (Numbers[i] == item) {
        flag=1;
    } else if (Numbers[i] > item)
        ust=i-1;
    else
        alt=i+1;
    if (!flag) i=(ust+alt)/2;
}
if (flag) printf("%d",i);
else printf("-1");
```

- a) It searches the array for the value of item and assigns its value to the middle position of the array.
- b) It searches the array for the value of item, and then displays its position in the array if it is found, or -1 otherwise.
- c) It reverses the elements of the array and print out the last item reversed if the operation is successful or -1 otherwise.
- d) It finds the position of the maximum value in the array and displays it if it is equal to item, or -1 otherwise.
- e) It searches the array for the value of item, compares its position with the first and the last element of the array, the finally it displays the position

19.What will be printed for “b” in the following program segment?

```
int a[10], b, *pa, i;
for (i=10; i>0; i--)
    a[i-1]=i*i;
pa = a;
b= *(pa+9) / *(a+2);
printf ("%d", b);
```

- a) 0 b) 11 c) 8 d) 12 e) 16

Use below program to answer next 3 questions.

```
#include <stdio.h>
int f(int b);
int g(int c);
int x=5;

void main (void) {
    int a;
    a= (f(g(x))-g(f(x)))/x;
    /** first_ printf   ***/
    printf("%d", x);
    /* second_printf */
    printf("%d", a);
}
int f (int b) { return b*b;}
int g (int c) {return x+++c;}
```

20.What will be printed for variable "x" by the first_printf statement?

- a) 0 b) 1 c) 5 d) 7 e) 10

21.What will be printed for variable "a" by the second_printf statement?

- a) 1 b) 5 c) 7 d) 8 e) 10

22.If the body of function g is replaced by the following statement

```
return c+++c;
```

What will be printed for variable-a by the second printf statement?

- a) 0 b) 5 c) 7 d) 8 e) 10

23.Which of the following definition is equivalent to the following code segment?

```
do {
sayac+=2;
} while (a || b );
```

- a) sayac+=2;while (!(a&& b)) sayac+=2;
b) while(a || b) sayac+=2;
c) sayac+=2;while (!(!a&& !b)) sayac+=2;
d) if(a || b) sayac+=2;
e) sayac+=2;if(a || b) sayac+=2;

24.What would be the value of x, after execution the code below?

```
int i,j,x=16;
for(i=0;i<5;i+=2)
for (j=4;j>i;j--) x+=i-j;
```

- a) 16 b) 3 c) 23 d) 5 e) -5

Use the following data to answer next 2 questions.

You are asked to write a function to compute the main diagonal sum and secondary diagonal sum for any 2-dimensional square matrix of size NxN. For instance; if the following 3x3 array is given

$$A = \begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix}$$

main_diagonal_sum = a+e+i,
secondary_diagonal_sum = c+e+g

```
int DiagonalSum (int *ary, int diag, int
size) {
/*   ary: the array
diag: (0: main diagonal, 1: secondary
diagonal)
size: size of the 2-d square array, N   */

int i, sum=0;
for(i=size-1; i>=0; i--)
switch(diag) {
    case 0: /* statement_1 */
        break;
    case 1: /* statement_2 */
        break;
}
    return sum;
}
```

25.Which of the following statements would you choose to replace statement_1 ?

- a) sum+=ary[i][i] b) sum+=ary[i][size-i-1]
c) sum+=ary[size*(i-1)+i]
d) sum+=ary[i-size][i] e) None of them

26.Which of the following statements would you choose to replace statement_2 ?

- a) sum+=ary[i][i] b) sum+=ary[(size-1)*i+size-1]
c) sum+=ary[size-i][i]
d) sum+=ary[i-size][i] e) None of them

27.Determine the output of the below program?

```
#include <stdio.h>
void f1(int *x, int y) {
    int t;
    t=*x; *x=y; y=t;
}
int main() {
    int a=0, b=0, c=0, d=0, e=0, f, g, h;
    a=10; b=20;
    f1(&a,b);
    printf("%d %d\n",a,b);
}
```

- a) 10 10 b) 10 20 c) 20 10 d) 20 20 e) 0 0

28. What is printed by below program?

☐ : represents one space character

```
#include <stdio.h>
int MeaningfulVariable(int x, int *y);
int NamesAreBetter(int *x, int y);

void main(void) {
    int a=1, b=2, aa;
    aa=MeaningfulVariable(a+b, &b);
    printf ("\n %d %d %d", a, b, aa);
    NamesAreBetter(&b, a);
    printf("\n %d %d %d", aa, b, a);
}

int MeaningfulVariable(int p, int *q) {
    *q=NamesAreBetter(q, p)*p;
    p++;
    return *q;
}

int NamesAreBetter(int *p, int q){
    *p=*p*q;
    q++;
    return *p;
}
```

- a) ☐18☐1☐18 b) ☐1☐2☐2
- ☐18☐1☐18 ☐2☐2☐1
- c) ☐1☐1☐2 d) ☐1☐10☐12
- ☐2☐2☐1 ☐12☐10☐1
- e) ☐1☐18☐18
- ☐18☐18☐1

29. What would be the output of below code?

```
int i, g[2][3]={2,4,6,1,3};
for (i=0; i<2; i++) g[i][i+1]+=3; g[1][2] -=g[1][0];
printf("%d", g[1][2]);
```

- a) 2 b) -1 c) 3 d) -4 e) 0

30. What would be the value of y, after execution the code below?

```
int x, y=32;
for(x=2; x<11; x+=4) y+=10+30/x-2*6;
```

- a) 26 b) 176 c) 14 d) Error (dividing to 0) e) 49

31. What do we get first, if we try to execute the code below?

```
int d, y=1;
for(d=0; d<4; d++) {
    if(d=2) y--;
    y/=I;
}
```

- a) Run time error (dividing by 0)
- b) y=0
- c) Run time error (Infinite loop)
- d) Compiling error (syntax error)
- e) y=13

32. What are the values of "X" and "Y" (with initial values of "Ali" and "Veli" respectively) after function call funny(X,Y)?

```
void funny(char *s, char *t) {
    char *p;
    p=t;
    while(*t++)
        p++;
    while(*s)
        *(p++)=*(s++);
    *p=*s;
}
```

- a) X="AliVeli", Y="Veli"
- b) X="Veli", Y="Ali"
- c) X="Ali", Y="Ali"
- d) X="Ali", Y="VeliAli"
- e) X="Veli", Y="Veli"

33. What is the output of the following program?

☐ : represents one space character.

```
int UpperTriangleSum(int a[][4], int n);
void Transpose(int a[][4], int n);
void main(void) {
    static int
    ary[4][4]={0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15};
    register int i, j;
    auto int sum=0;

    printf("\n %d", UpperTriangleSum(ary, 4));
    Transpose(ary, 4);
    printf("%d", UpperTriangleSum(ary, 4));
}

int UpperTriangleSum (int a[][4], int n) {
    register int i, j;
    auto int sum=0;
    for(i=0; i<n; i++)
        for(j=i+1; j<n; j++)
            sum+=a[i][j];
    return sum;
}

void Transpose(int a[][4], int n){
    register int i, j;
    auto int temp;
    for(i=0; i<n; i++)
        for(j=0; j<n; j++)
            {
                temp=a[i][j];
                a[i][j]=a[j][i];
                a[j][i]=temp;
            }
}
```

- a) ☐30☐60 b) ☐3030 c) ☐60☐30
- d) ☐60 e) ☐30
- 30 30

34. Which statements should be written for the (1) and (2) respectively?

```
int i=2, j=0, tut;
scanf("%d", &tut);
do{ if(tut==2 || tut==1) { j=1; break; }
if(...(1)... ) { j=1; break; }
i++; }
while(...(2)...);
if (j==1) printf("the number %d is not a
prime number", tut);
else printf("the number %d is a prime
number", tut); }
```

- | | |
|-------------|--------|
| (1) | (2) |
| a) tut/i==0 | i<=tut |
| b) tut/i==0 | i<tut |
| c) tut%i==0 | i<=tut |
| d) tut%i==0 | i<tut |
| e) tut%i==1 | i<=tut |

35. What would be the value of w, after execution the code below?

```
int i=1, w=5;
do{
if(i==2) w--;
w++; i++; }
while (i>5);
```

- a) 8 b) 12 c) 5 d) 9 e) 6

36. What would be the value of z, after execution the code below?

```
int j, i, z=0;
for (j=0; j<5; j++)
for (i=1; i<3; ++i) {
if(j==2) break;
z+=2; }
```

- a) 8 b) 16 c) 12 d) 10 e) 14

37. Which one is an incorrect declaration and initialization of the C string s1?

- a) char s1[] = "BLUE";
b) char s1[5] = "BLUE";
c) char s1[4] = "BLUE";
d) char s1[5] = {'B', 'L', 'U', 'E', '\0'};
e) None. All of them are correct.

38. What will be the value of string pointed by newptr ?

```
char s[10] = "Green";
char *ptr1 = "Blue";
newptr = strncpy(s, ptr1, 2);
```

- a) "Blue" b) "Green" c) "Bleen"
d) "Grue" e) "GrBlue"

39. What will be the output of below segment?

```
char s[10] = "Green";
char *newptr = *s+1;
printf("%c", *newptr);
```

- a) Green
b) reen
c) G
d) H
e) r

40. Determine the output of below program?

```
#include <stdio.h>
int z=100;
void f3(int *x, int *y) {
int z=50;
*x=*y; *y=z;
}
int main() {
int a=0, b=0, c=0, d=0, e=0, f, g, h;
a=10; b=20;
f3(&a, &b);
printf("%d %d %d\n", a, b, z);
}
```

- a) 10 20 0
b) 10 20 10
c) 10 20 20
d) 10 20 30
e) 20 50 100

41. Determine the output of the above program?

```
#include <stdio.h>
int z=100;
void f4(int x, int y) {
z=x+y;
}
int main() {
int a=0, b=0, c=0, d=0, e=0, f, g, h;
a=10; b=20; z=50;
f4(a, b);
printf("%d %d %d\n", a, b, z);
}
```

- a) 10 0 0
b) 10 20 10
c) 10 20 20
d) 10 20 30
e) 20 50 100

42. Determine the output of below program?

```
#include <stdio.h>
int main() {
    int A[N]={0,1,2,3,4,5,6,7,8,9};
    int i,j,k,t;

    for (i=0,j=N-1;i<j;i++,j--)
    {
        t=A[i]; A[i]=A[j]; A[j]=t;
    }
    for (i=0;i<N;printf("%d ",A[i]),i++);
    printf("\n");
}
```

- a) 0 1 2 3 4 5 6 7 8 9
- b) 9 1 7 3 5 4 6 2 8 0
- c) 1 2 3 4 5 6 7 8 9 10
- d) 9 8 7 6 5 4 3 2 1 0
- e) 1 3 5 7 9 8 6 7 8 9

43. Determine the output of the below program?

```
#include <stdio.h>
int main() {
    int A[N]={1,2,1,2,1,2,1,2,1,2};
    int i,j,k,t;

    for (i=0,j=N-1;i<j;i+=2,j-=2)
    {
        t=A[i]; A[i]=A[j]; A[j]=t;
    }
    for (i=0;i<N;printf("%d ",A[i++]));
    printf("\n");
}
```

- a) 2 2 2 2 2 1 1 1 1 1
- b) 2 1 2 1 2 1 2 1 2 1
- c) 1 2 1 2 1 2 1 2 1 2
- d) 1 1 1 1 1 2 2 2 2 2
- e) 1 2 3 4 5 6 7 8 9 0

44. Determine the output of the below program?

```
#include <stdio.h>
int main() {
    int A[N]={0,1,2,3,4,5,6,7,8,9},
    B[N]={1,3,5,7,9,8,6,4,2,0};
    int i,j,k,t;

    for (i=0;i<N;i++) {
        if (A[i]>B[i]) printf("%d ",A[i]);
        else printf("%d ",B[i]);
    }
    printf("\n");
}
```

- a) 1 3 5 7 9 8 6 7 8 9
- b) 0 2 4 6 8 9 7 7 8 9
- c) 1 3 5 7 9 8 6 4 2 0
- d) 1 2 3 4 5 6 7 8 9 10
- e) 0 1 2 3 4 5 6 7 8 9

45. Determine the output of the below program?

```
#include <stdio.h>
#define M 5
int main() {
    int A[M][M]=
    {{0,1,2,3,4},{5,6,7,8,9},{10,11,12,13,14},{15,16,17,18,19},{20,21,22,23,24}};
    int i,j,k,t,rc;

    rc=2;
    for (i=0;i<M;i++)
    {
        t=A[rc][i]; A[rc][i]=A[i][rc];
        A[i][rc]=t;
    }
    for (i=0;i<M;i++,printf("\n"))
        for (j=0;j<M;printf("%d",A[i][j]),j++);
    printf("\n");
}
```

- a) 4 1 2 3 0 b) 0 1 2 3 4
 5 8 7 6 9 5 6 7 8 9
 10 11 12 13 14 14 13 12 11 10
 15 18 17 16 19 15 16 17 18 19
 24 21 22 23 20 20 21 22 23 24
- c) 0 1 22 3 4 d) 0 1 22 3 4
 5 6 17 8 9 5 6 17 8 9
 10 11 12 13 14 14 13 12 11 10
 15 16 7 18 19 15 16 7 18 19
 20 21 2 23 24 20 21 2 23 24
- e) 0 1 10 3 4
 5 6 11 8 9
 2 7 12 17 22
 15 16 13 18 19
 20 21 14 23 24

**THERE ARE 5 BONUS QUESTIONS.
YOUR EXAM WILL BE GRADED OVER 40 QUESTIONS.
NO WRONG ANSWER CANCELS ANY CORRECT ANSWER.
DO NOT FORGET TO FILL IN ALL THE INFORMATION
IN THE OPTICAL FORM!
OTHERWISE YOUR EXAM WILL NOT BE GRADED!
WRITE YOUR NAME ON BOTH OF THE EXAM
BOOKLET AND THE OPTICAL FORM!**

Student ID	your unique 7-digit ID number
Course ID	5710230
Sect	no need to fill
Exam Type	A
Test Number	2

AFTER YOU COMPLETE, CHECK AGAIN!