

컴파일러개론 Assign 05

과제 제출일자 : 2019/11/07

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분반 : 01

과제 : JVM 어셈블리어를 활용한 코드 작성

스크린샷 및 코드 실행 사진

〈재귀를 이용해 구현〉

```

1  .class public Test
2  .super java/lang/Object
3  ; standard initializer
4  .method public <init>()V
5  aload_0
6  invokevirtual java/lang/Object/<init>()V
7  return
8  .end method
9  .method public static sum(I)I
10 .limit stack 32
11 .limit locals 32
12 iload_0
13 iconst_1
14 if_icmpne Label1
15 iconst_1
16 ireturn
17 Label1:
18 iload_0
19 iload_0
20 iconst_1
21 isub
22 invokestatic Test/sum(I)I
23 iadd
24 ireturn
25 .end method
26 .method public static main([Ljava/lang/String;)V
27 .limit stack 32
28 .limit locals 32
29 getstatic java/lang/System/out Ljava/io/PrintStream;
30 bipush 100
31 invokestatic Test/sum(I)I
32 invokevirtual java/io/PrintStream/println(I)V
33 return
34 .end method

```

```

C:\Compiler-HW\src\cn\compiler19\hw5>java sum
5050

```

수필 작성 코드

```

• class public Test
• super java/lang/Object
• standard initializer
• method public <init>() V
  aload_0
  invoke nonvirtual java/lang/Object/<init>() V
  return
• end method
• method public static sum(I) I
  limit stack 32
  limit locals 32
  iload_0
  iconst_1
  if_icmpne Label
  iconst_1
  ireturn
Label1:
  iload_0
  iload_0
  iconst_1
  isub
  invoke static Test/sum(I) I
  iadd
  ireturn
• end method
• method public static main([Ljava/lang/String;) V
  limit stack 32
  limit locals 32
  getstatic java/lang/System/out Ljava/io/PrintStream;
  bipush 100
  invoke static Test/sum(I) I
  invoke virtual java/io/PrintStream/println(I) V
  return
• end method

```

〈반복문을 이용해 구현〉

```

1  .class public Test
2  .super java/lang/Object
3  ; strandard initializer
4  .method public <init>()V
5  aload_0
6  invokenonvirtual java/lang/Object/<init>()V
7  return
8  .end method
9  .method public static sum(I)I
10 .limit stack 32
11 .limit locals 32
12 iconst_0
13 istore_1
14 iconst_1
15 istore_2
16 Label_LoopStart:
17 iload_2
18 iload_0
19 if_icmpgt Label_LoopOut
20 iload_1
21 iload_2
22 iadd
23 istore_1
24 iinc 2 1
25 goto Label_LoopStart
26 Label_LoopOut:
27 iload_1
28 ireturn
29 .end method
30 .method public static main([Ljava/lang/String;)V
31 .limit stack 32
32 .limit locals 32
33 getstatic java/lang/System/out Ljava/io/PrintStream;
34 bipush 100
35 invokestatic Test/sum(I)I
36 invokevirtual java/io/PrintStream/println(I)V
37 return
38 .end method

```

```

C:\#Compiler-HW\src\cnu\compiler19\hw5_1>java Test
5050

```

수필 작성 코드

```

• class public Test
• super java/lang/object
; standard initializer
• method public <init>() V
  aload - 0
  invoke nonvirtual java/lang/Object/<init>() V
  return
• end method
• method public static sum(I)I
  ; limit stack 32
  ; limit locals 32
  iconst - 0
  istore - 1
  iconst - 1
  istore - 2
  Label_LoopStart:
  iload - 2
  iload - 0
  if_icmpgt Label_LoopOut
  iload - 1
  iload - 2
  iadd
  istore - 1
  inc 2 1
  goto Label_LoopStart
  Label_LoopOut:
  iload - 1
  ireturn
• end method
• method public static main([Ljava/lang/String;) V
  ; limit stack 32
  ; limit locals 32
  getstatic java/lang/System/out Ljava/io/PrintStream;
  bipush 100
  invoke static Test/sum(I)I
  invoke virtual java/io/PrintStream/println(I) V
  return
• end method

```

총 과제 수행에 걸린 시간

구글링으로 jasmin instruction을 찾아보며 직접 코드를 작성하는데 2 ~ 3시간 정도가 소요 되었으며, 직접 코드를 쓰는데 20 ~ 30분 정도가 소요되었습니다.